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Kimberlite-Indicator Mineral Till Survey of the Sawn Lake Area (NTS 84B/13), Southern Buffalo Head Hills, Alberta

G.J. Prior, R.C. Paulen, J.G. Pawlowicz and M.M. Fenton

Alberta Geological Survey

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EUB

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Alberta Geological Survey

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Abstract

The Sawn Lake (NTS 84B/13) map area covers the northwestern part of the Buffalo Head Hills kimberlite field, within which 38 kimberlites have been discovered since 1997. During the 2002 program, 55 till samples (with an average weight of 29 kg) were collected within map area 84B/13, representing an average density of approximately one sample per 16 km^2. Heavy mineral concentrates were prepared and picked for kimberlite-indicator minerals, including pyrope, eclogitic garnet, Cr-diopside, olivine, picroilmenite and chromite. In addition, data were obtained on epidote, spinel, apatite, tourmaline, chlorite, rutile, monazite, sulphide and Cr-amphibole.

Within the central and southwestern parts of the Sawn Lake map area, high counts of pyrope, chromite and olivine grains in till occur in a west-southwest–trending zone up to 6 km wide with a minimum length of 15 km. The most anomalous sample returned 418 pyropes, 190 chromites and 137 olivines (picked grain counts). To the south and east of the anomalous pyrope-chromite-olivine trend, the kimberlite-indicator mineral assemblage tends to be dominated by olivine (50% to 100% olivine) with counts of up to 150 picked olivine grains per sample. The northeastern part of map area 84B/13, which contains a number of kimberlites, including the K252 kimberlite (estimated diamond grade of 55 carats per hundred tonnes), is characterized by tills lacking pyrope and containing relatively modest amounts of olivine +/- chromite +/- Cr-diopside (up to 20 picked olivine grains per sample).

A strong pyrope-olivine-chromite anomaly in till was identified east of Sawn Lake, in the north-central part of NTS map area 84B/13 (123 pyrope, 53 olivine and 28 chromite grains recovered from one sample). These grains may indicate the presence of an undiscovered kimberlite nearby. Glacial dispersal is most likely to have been in a southwesterly direction, and there are no known kimberlites northeast of this anomaly.

1 Introduction

1.1 Overview

The Sawn Lake (NTS 84B/13) map area covers the northwestern part of the Buffalo Head Hills kimberlite field, within which 38 kimberlites have been discovered since 1997. Approximately two-thirds of these kimberlites contain diamonds with estimated grades of up to 55 carats per hundred tonnes. The 2002 kimberlite-indicator mineral (KIM) till survey by the Alberta Geological Survey, described in this report, was undertaken to

1) collect information on KIM dispersal in an area of known kimberlites to help diamond explorers optimize exploration programs elsewhere in northern Alberta;
2) assess the effectiveness of regional till KIM surveys compared to regional stream sediment KIM surveys; and
3) provide information that might lead to the discovery of additional kimberlites (and diamonds) in the Sawn Lake area.

During the 2002 program, 55 till samples were collected within map area 84B/13, representing an average density of approximately one sample per 16 km^2. Heavy mineral concentrates were prepared and picked for kimberlite-indicator minerals, including pyrope, eclogitic garnet, Cr-diopside, olivine, picroilmenite and chromite. In addition, data were obtained on epidote, spinel, apatite, tourmaline, chlorite, rutile, monazite, sulphide and Cr-amphibole.

This report releases data regarding the picking of KIM grains from heavy mineral fractions prepared from the samples. It also provides information on the spatial distribution of these grains relative to known kimberlites in the Sawn Lake area. Some aspects of the project described in this report have been presented in Prior et al. (2003a; 2003b). In addition, Keith (2004) studied Cr-rich pargasitic amphiboles obtained from the 2002 Sawn Lake area till samples.

1.2 Location and Physiography

The Buffalo Head Hills of north-central Alberta form a northerly trending upland region lying between the Peace River Lowland (Cadotte Plain) to the west and the Wabasca Lowland (Loon Lake Plain) to the east (Pettapiece, 1986). The Sawn Lake map area (NTS 84B/13) lies within the southern Buffalo Head Hills, approximately 50 km northwest of the Red Earth Creek community. The survey area is characterized by a relatively flat upland with hummocky terrain dissected by meltwater channels. Outcrops of kimberlite occur in the Buffalo Head Hills, forming small prominent knobs above the surrounding hummocky topography. The area has a maximum elevation of 820 metres above mean sea level, almost 300 metres above the Wabasca Lowland to the east. Oil and gas production occur in the region, and parts of the forest have been logged

2 Previous Kimberlite-indicator mineral Sampling of Surface Material in the Sawn Lake Map Area

Surface till and sand (glaciofluvial) samples collected by AGS within the Sawn Lake map area prior to 2002, and processed for KIM grains, are listed in Table 1. All of these samples were collected adjacent to roads. The samples reported by Eccles et al. (2001) were collected as part of a regional KIM sampling program covering the Peerless Lake 1:250 000 map area (84B). The remaining samples listed in Table 1

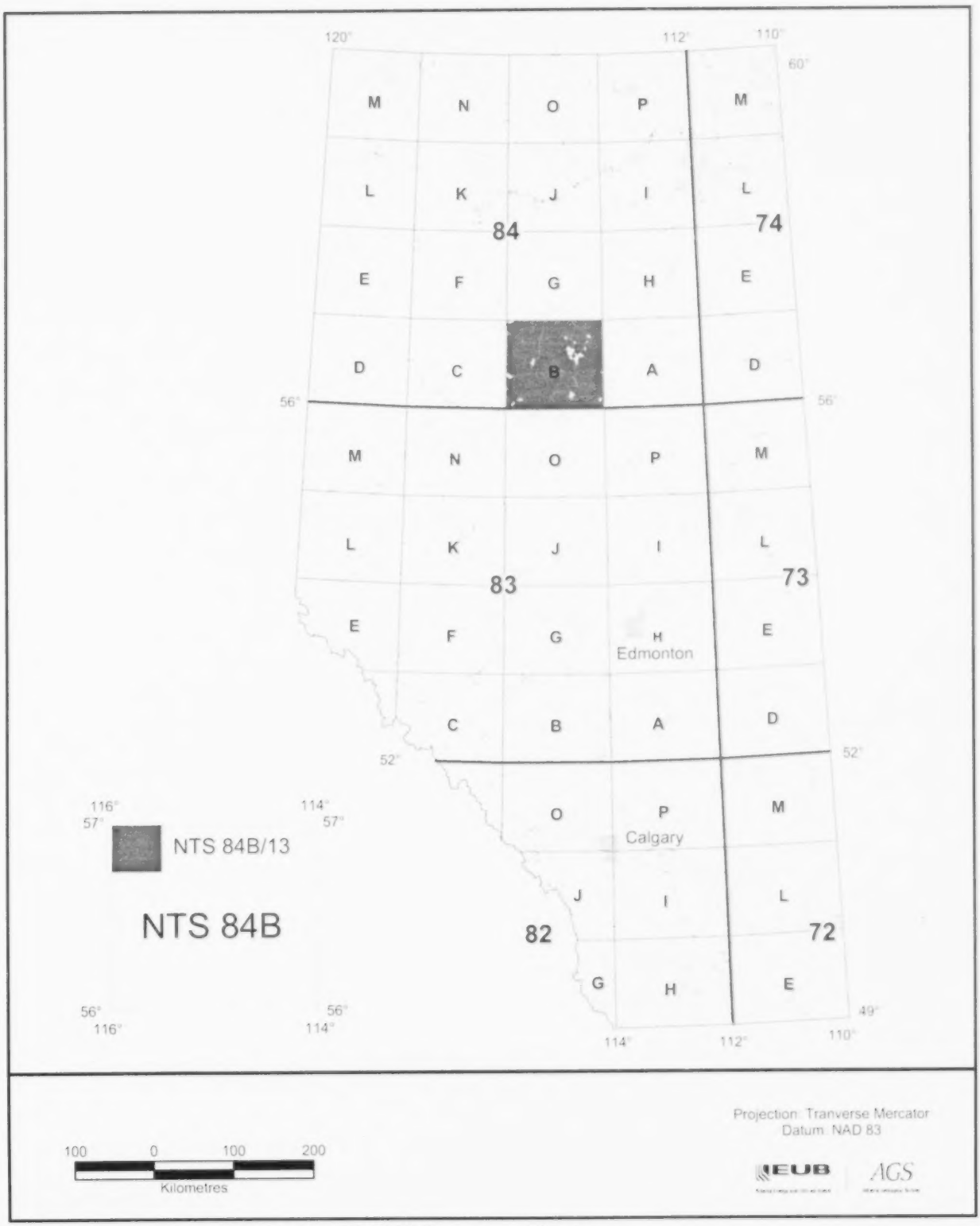


Figure 1. Location of the Sawn Lake (NTS 84B/13) map area, Alberta.

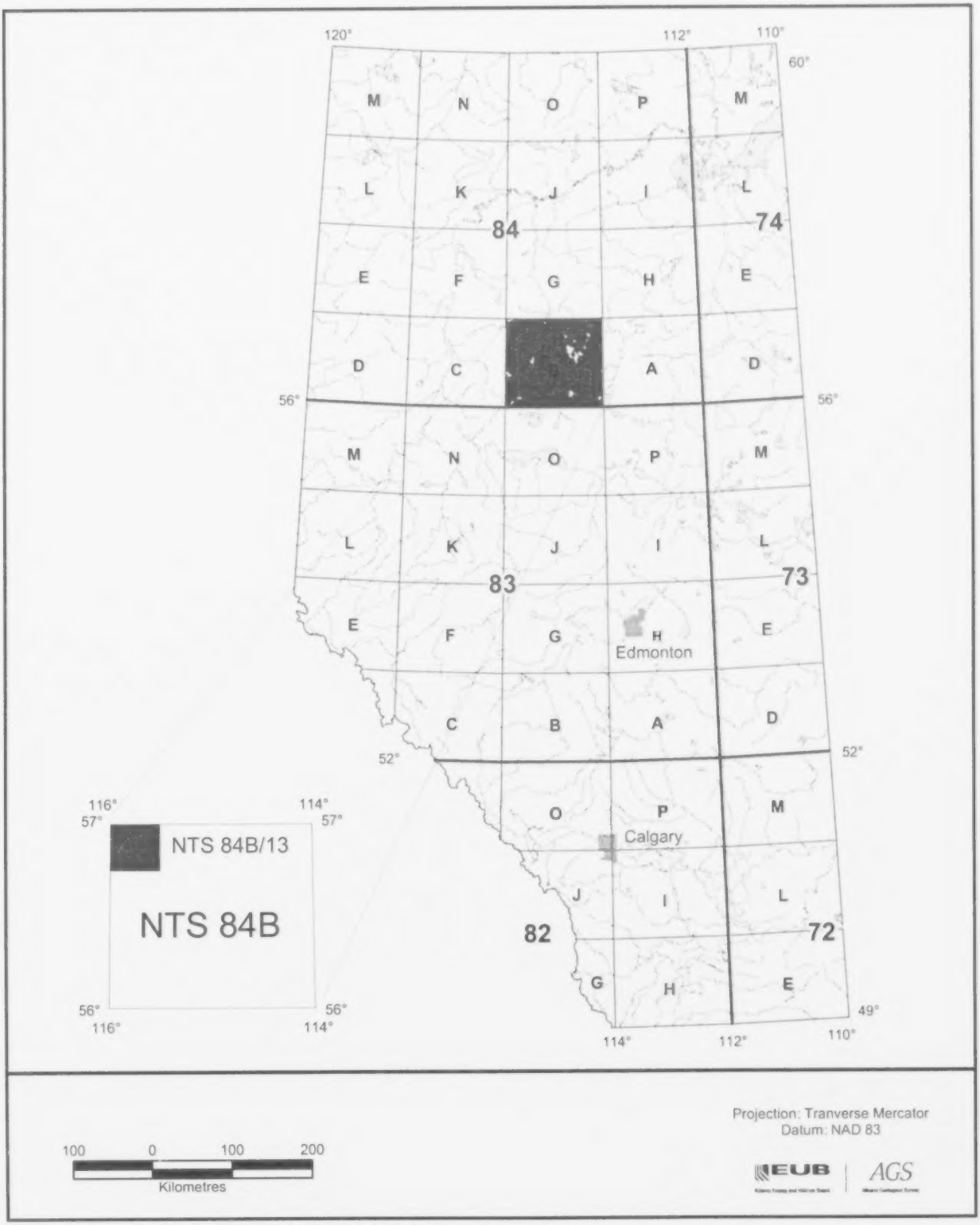


Figure 1. Location of the Sawn Lake (NTS 84B/13) map area, Alberta.

were collected as part of the AGS surficial mapping program. Interestingly, sample NAT95-134, which returned 152 possible pyrope grains, was collected in 1995 before the existence of kimberlites in the Buffalo Head Hills was known (Fenton and Pawlowicz, 1997).

An Alberta Geological Survey and Geological Survey of Canada helicopter-supported regional stream water and sediment survey of the Buffalo Head Hills, including KIM analyses of heavy mineral concentrates, covered the Sawn Lake area in 2001 and 2002 (Friske et al., 2003). In addition, seven stream sediment heavy mineral concentrate KIM results are reported by Eccles et al. (2001).

Table 1. Till and sand samples with indicator mineral data collected from map area 84B/13 before 2002

Year	Material Sampled	Number of Field Samples	First and Last Sample Number	Sample Collection Reference
1995	till	2	NAT95-134 NAT95-146	Fenton and Pawlowicz (1997); Pawlowicz et al. (1998)
1996	till	1	NAT96-216	Pawlowicz et al. (1998)
1998	till	1	NAT98-260	Fenton and Pawlowicz (2001)
1998	till and glaciofluvial sand	17	RE98-84B-35-001 RE98-84B-165-001	Eccles et al. (2001)
2001	till	2	1401 1402	

3 Geology

3.1 Bedrock Geology

3.1.1 Sedimentary Rocks

The Buffalo Head Hills are underlain by Cretaceous strata of the Western Canada Sedimentary Basin (Figure 2). The area near Sawn Lake is shown on maps by Green et al. (1970) and Hamilton et al. (1999) to be underlain by dark grey shale and silty shale of the Upper Cretaceous Smoky Group. However, recent palynological results indicate the uppermost part of the Buffalo Head Hills in the Sawn Lake area is underlain by Upper Campanian rocks correlative to the Wapiti Formation (Pawlowicz et al. 2005; Figure 3). This interpretation is supported by the occurrence of sandstone units within the shallow bedrock (Pawlowicz et al., 2005; Lithologs from auger-core drilling program 2002, southern Buffalo Head Hills, Pawlowicz et al., work in progress, 2005). Stratigraphic markers in the lower part of the Upper Cretaceous succession indicate nearly horizontal dips in the Sawn Lake (D. Chen, pers. comm., 2005).

3.1.2 Kimberlites

The Buffalo Head Hills kimberlite field, which occurs within the southern Buffalo Head Hills and the adjacent Loon Lake Plain (Loon River lowland) to the east (Figure 2), contains a minimum of 38 kimberlite bodies (Hood and McCandless, 2004). These kimberlites are hosted by a Cretaceous succession composed dominantly of marine shales of the Shaftesbury Formation and Smoky Group, which are separated by deltaic to marine sandstones of the Dunvegan Formation (Green et al., 1970; Hamilton et al., 1999). Some kimberlite pipes of the Buffalo Head Hills field are quite large with diameters of up to 600 metres, based upon drillhole information and ground magnetic signatures. Several of the kimberlites form bedrock highs, which may be accompanied by topographic highs, due to their greater resistance to weathering and glacial erosion relative to the soft Cretaceous sedimentary rocks. In

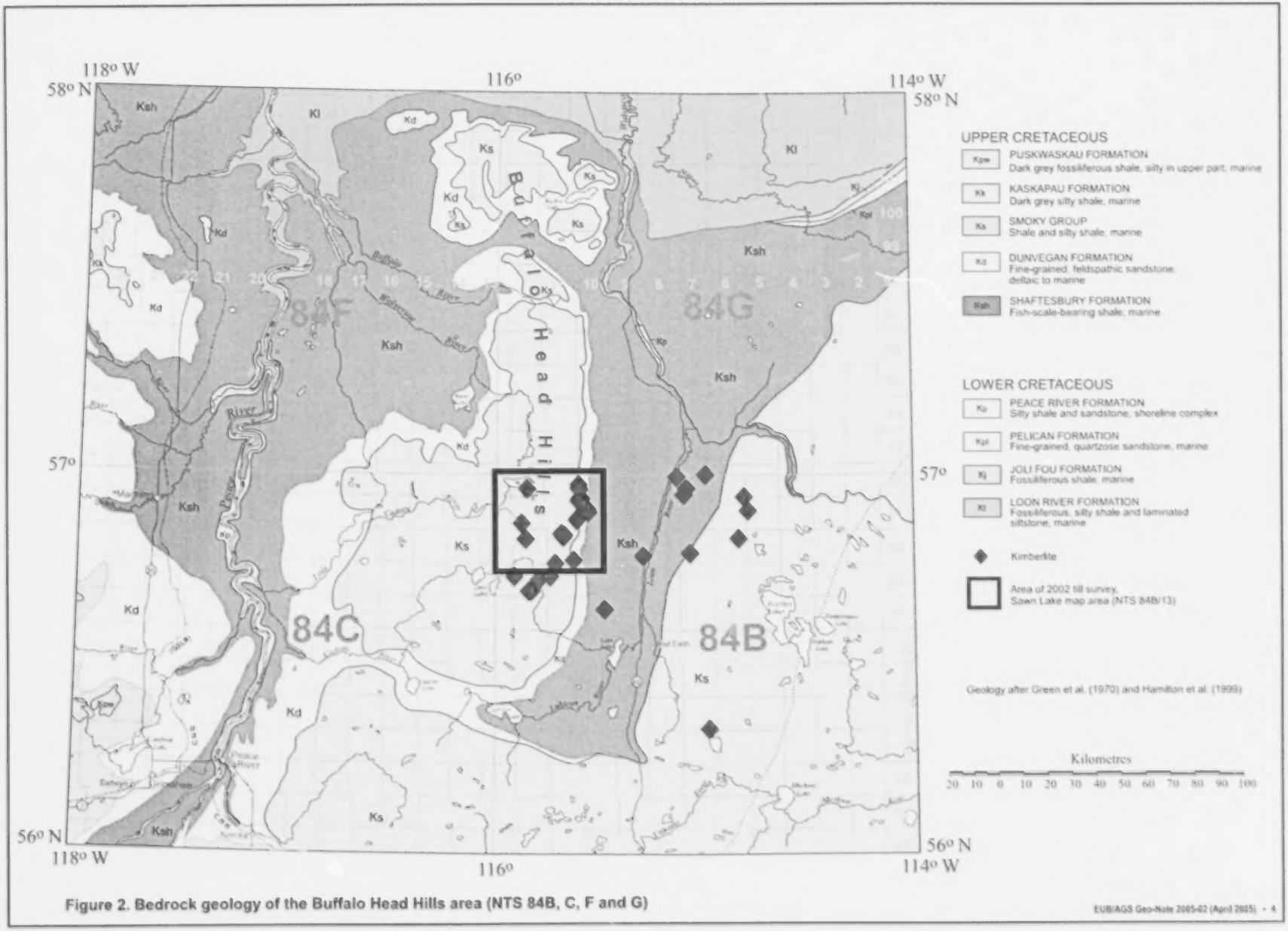


Figure 2. Bedrock geology of the Buffalo Head Hills area (NTS 84B, C, F and G)

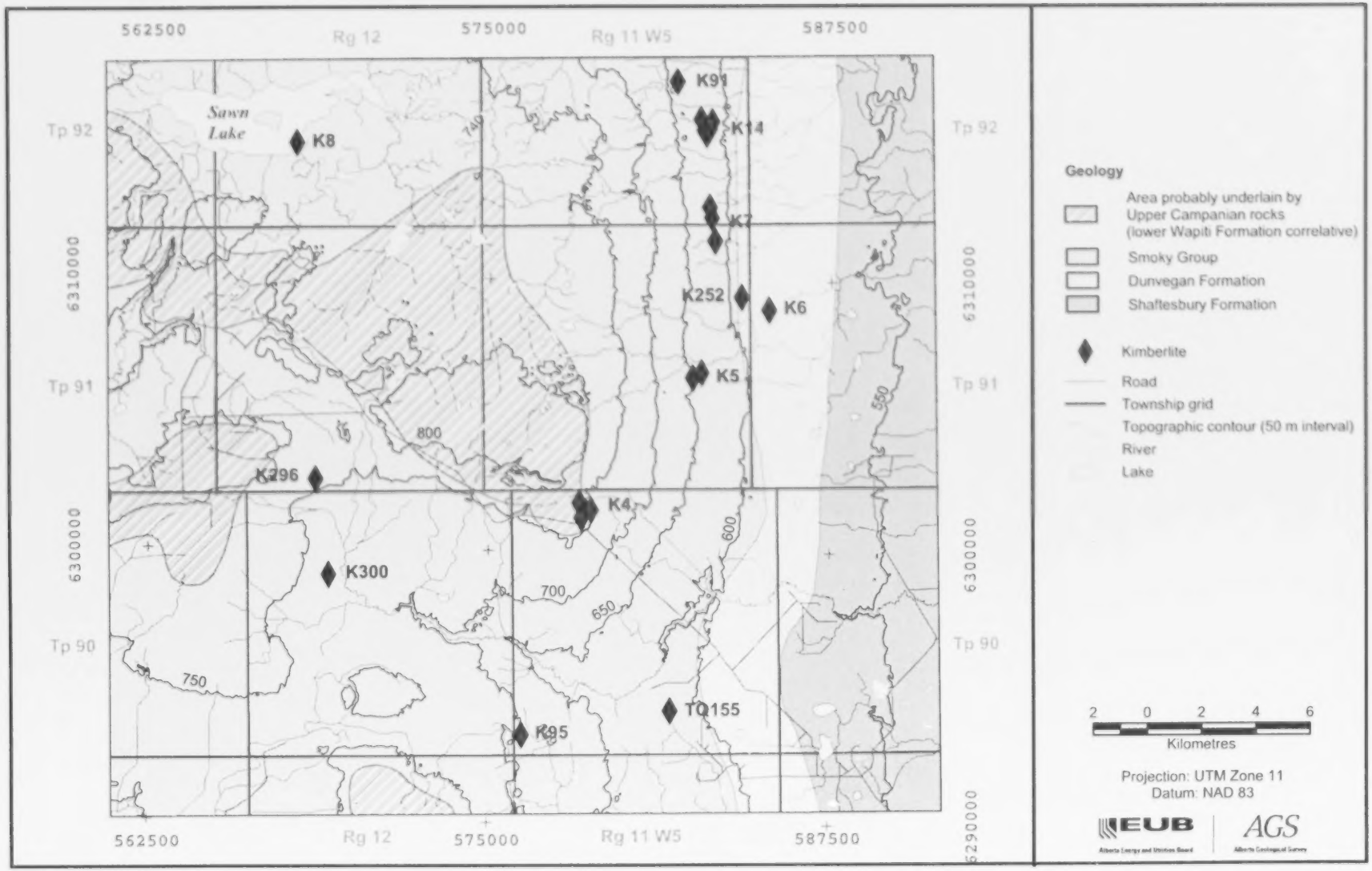


Figure 3. Geology of the Sawn Lake map area (NTS 84B/13), southern Buffalo Head Hills (After Green et al., 1970; Hamilton et al., 1999; Pawlowicz et al., 2005).

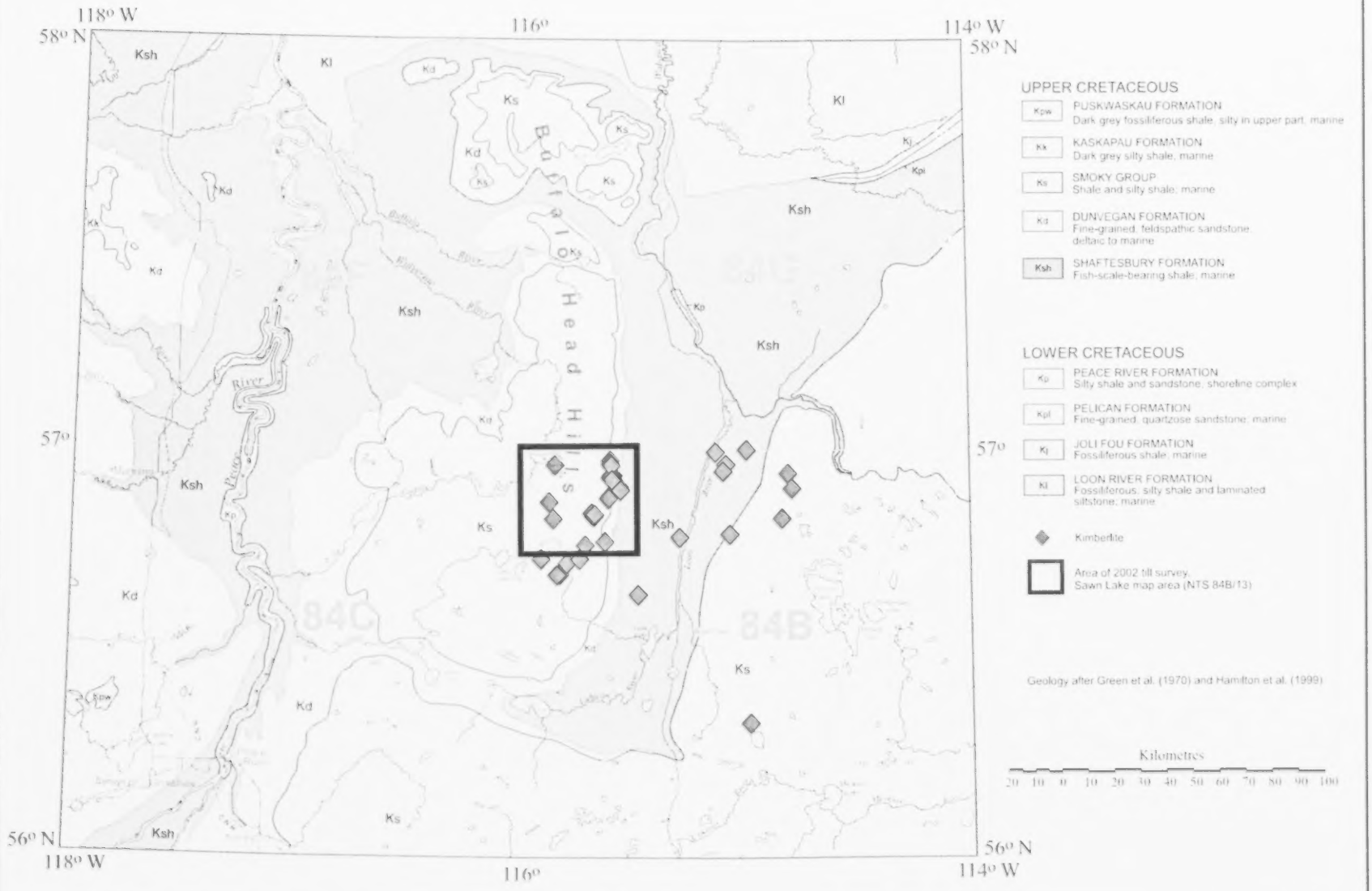


Figure 2. Bedrock geology of the Buffalo Head Hills area (NTS 84B, C, F and G)

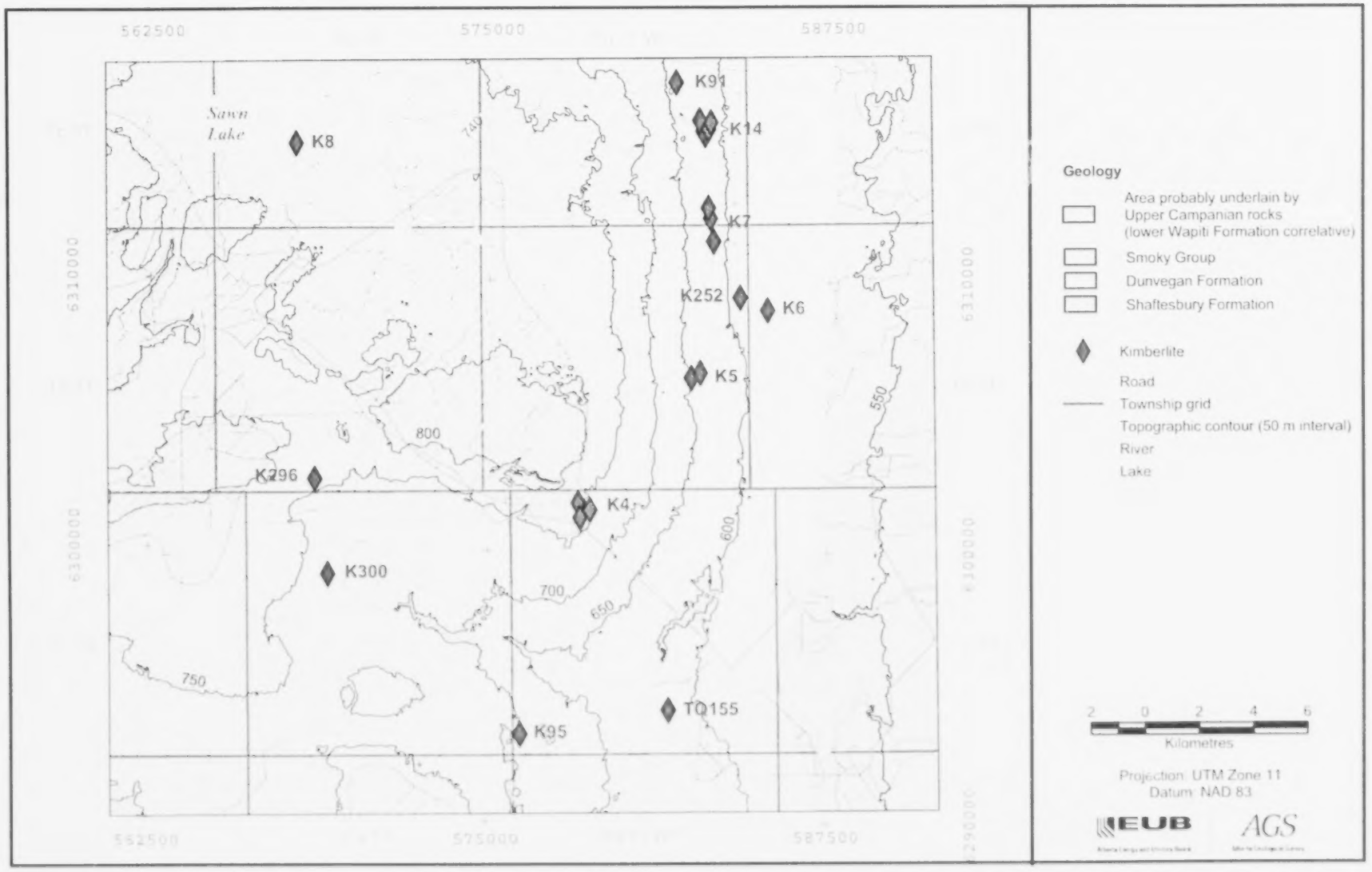


Figure 3. Geology of the Sawn Lake map area (NTS 84B/13), southern Buffalo Head Hills (After Green et al., 1970; Hamilton et al., 1999; Pawlowicz et al., 2005).

general, kimberlites of the Buffalo Head Hills field consist primarily of crater facies, juvenile lapilli-rich, olivine (crystal) tuffs (Boyer et al., 2003; Eccles, 2004). Perovskite (U-Pb) dates obtained on four Buffalo Head Hills kimberlites indicate emplacement ages of 88±5, 91.9±2, 86±3 and 87±3 million years ago for kimberlites K5, K6, K7A and K14, respectively (Skelton et al., 2003; Eccles, 2004).

The mineralogy of kimberlites within the Buffalo Head Hills field has been reported on by Hood and McCandless (2003; 2004):

> "Indicator mineral assemblages have been assessed for twenty-nine of the Buffalo Hills kimberlites, with forsteritic olivine forming the dominant xenocryst or cryptogenic mineral species. Chromian pyrope garnet and chromite are also important constituents, although some pipes (e.g. K8, K7B, K7C, and BM3) are devoid of these minerals. Eclogitic pyrope-almandine, titanian pyrope, chromian augite/diopside, and picroilmenite are also present in lesser amounts, and some bodies contain chromian corundum, zircon, edenitic amphibole, and Mg-Cr-Al spinel" (Hood and McCandless, 2003, p.1). "Xenocryst occurrence varies widely between bodies and appears uncorrelated with geographic location, pipe morphology or diamond content." (Hood and McCandless, 2004, p. 735).

Of the 38 kimberlites within the Buffalo Head Hills field, 26 are known to contain diamonds. Kimberlites in the northern part of this field tend to have higher diamond content. The northern group of kimberlites includes K252, which has the highest known diamond content with an estimated grade of 55 carats per hundred tonnes (Hood and McCandless, 2004).

3.2 Surficial Geology

3.2.1 Surficial Materials

The surficial geology of the southeastern Buffalo Head Hills (NTS 84B/NW), which includes the Sawn Lake (NTS 84B/13) area, was mapped at 1:100 000 scale by AGS (Paulen et al., 2003). Subsequent detailed 1:50 000 mapping of the Sawn Lake area (Trommelen, 2004; Surficial Geology of the Sawn Lake Area (NTS 84B/13), Trommelen et al., work in progress, 2005) provides excellent detail on the distribution of surficial sediments within the study area. The present surficial geology in the region is largely the result of the advance and retreat of Late Wisconsin ice (Lostwood Glaciation; Fenton, 1984). Drift thickness ranges from thin (<1 m) veneers, with rare outcrops, to over 60 m across the map area (Pawlowicz and Fenton, 2005).

Much of the Sawn Lake area is covered by moraine (till), of which there are two dominant types:

1) Basal Till: Basal till occurs at the surface along the flanks of the Buffalo Head Hills and in the Wabasca Lowland. The till is characterized by non-sorted diamicton with a silty-clay matrix that is commonly fissile and compact, and contains 1% to 5% clasts ranging from granules to cobbles. Topographically, the deposits form flat, low-relief plains. This material is interpreted to be till deposited directly by glacial ice without transport or modification by water. Due to the silty clay texture of the tills, and generally low topographic gradient, water tables are often perched and the moraine plains host numerous Holocene fens and peat bogs.

2) Ablation Till (Stagnant Ice Moraine): A considerable region of hummocky terrain, with circular or "doughnut" morphology, commonly occurs on the uplands of the Buffalo Head Hills. The material consists of non-sorted diamicton with a matrix ranging from sandy-silt to silty-clay. The matrix is typically poorly compacted and local sand lenses (medium to coarse-grained) are common. The diamicton contains 5% to 10% clasts, which are more angular and less polished than the faceted clasts of basal till. The ablation till may be weakly stratified, likely due to the greater presence of water

during deposition. Topographically, the stagnant ice moraine is typified by undulating to hummocky terrain consisting of roughly equidimensional hills and depressions. Relief is often greater than two metres, which creates a landscape significantly different from areas covered by basal till. Stagnant ice moraine is thought to represent glacial sedimentation during ice stagnation and retreat. It represents a combination of ablation (melt-out) till, and glaciofluvial and glaciolacustrine material. The stagnant ice moraine often forms doughnuts consisting of a roughly circular till hill with a central depression in-filled with lacustrine sediments and subsequent bog peat.

Glaciofluvial valley systems, extending for up to 20 km in length, are found throughout the survey area. These valleys, which are to 300 m wide and 50 m deep, have significant negative topographic relief relative to the topography of the surrounding region. Channels formed by ice-marginal meltwater flow tend to be aligned perpendicular to the topographic gradient and define retreating ice margins, whereas the proglacial channels flow along topographic gradients and are associated with sorted glaciofluvial outwash deposits. Ice-contact sediment occurs in the form of small kames (up to 0.5 km across), eskers (averaging 1 km in length) and small crevasse fill deposits. These ice-contact deposits consist of poorly sorted, massive to crudely stratified gravel, sand and minor silt. Glaciolacustrine sediments are rare in the Sawn Lake region, given the Buffalo Head Hills topography, but can be found in the nearby Loon Lake Plain (Paulen et al., 2003). Colluvium, in the form of slumped deposits, is found along several of the main valleys in the map area. Modern fluvial sediment is dominantly fine-grained with organic detritus and minor gravel and sand in more developed streams. Organic deposits are found throughout the map region in areas of poor surface drainage, such as moraine plains and in depressions within stagnant ice moraine.

3.2.2 Glacial History

A reconstruction of Late Wisconsin ice flow in northern Alberta is shown in Figure 4. Glacial advances in northern Alberta originated from the Laurentide Ice Sheet, which generally flowed across central Alberta in a southwesterly direction (Fulton, 1989). According to regional studies, ice advanced to its maximum Late Wisconsin limit approximately 23 to 24 thousand years ago before present (ka) (Dyke et al., 2002) and retreated from the Buffalo Head Hills by 11 ka (Dyke et al., 2003). Local evidence for the southwesterly flow of the Late Wisconsin Laurentide Ice Sheet across the Sawn Lake area during glacial maximum includes

- a sculpted crag and tail feature at the K5 kimberlite outcrop (Paulen et al., 2003; Surficial Geology of the Sawn Lake Area (NTS 84B/13), Trommelen et al., work in progress, 2005)
- poorly developed flutings, trending west-southwest, formed in the upper part of the Buffalo Head Hills in a local area where the drift forms only a thin (<2 m) veneer over the Cretaceous mudstone (Paulen et al., 2003),
- striae on a polished surface of the K6 kimberlite outcrop indicating south-southwest (212°) glacial flow (Paulen and McClenaghan, in press).

Recession of the western margin of the Laurentide Ice Sheet began around 14 ka (Dyke, 2004). St-Onge (1972) indicates that drainage of the Lesser Slave Lake valley occurred about 11 000 years ago, based on a gyttja date of 11 400±190 years before present. During glacial retreat, the ice margin retreated down-drainage, essentially ponding all meltwater in proglacial lakes and trapping the terrestrial and meltwater drainage from the recently deglaciated eastern Cordillera and foothills (cf. Mathews, 1980). This created an unstable ice margin and surging ice lobes advanced and retreated within the proglacial lakes, modifying or obliterating older streamlined landforms and creating strongly fluted terrain in the lowlands. Ice was often confined by topography and deglacial streamlined landforms commonly deviate considerably from glacial maximum flow directions. Sometime after glacial maximum, southwardly

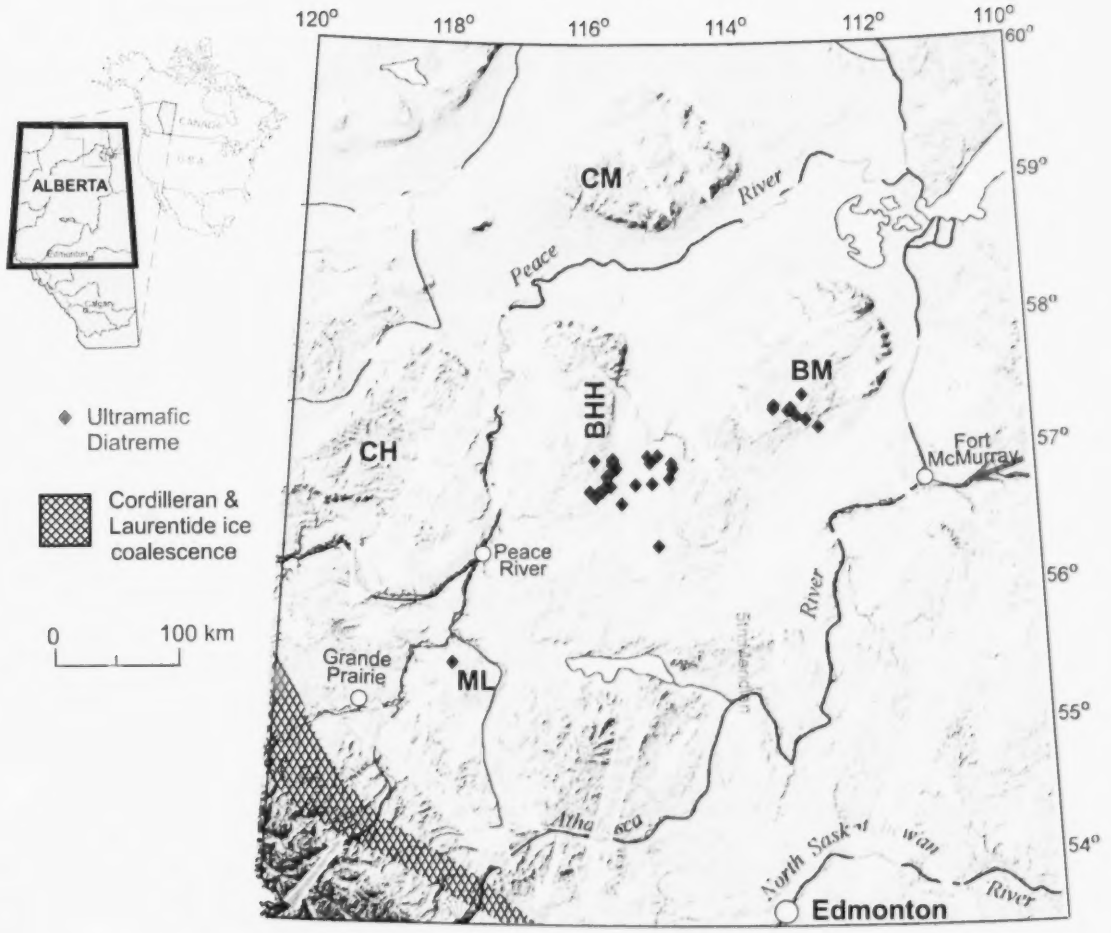


Figure 4. Flow of the Laurentide Ice Sheet during the Late Wisconsin. The large arrows indicate ice flow at glacial maximum (derived from Prest et al., 1968 and Fulton, 1989). The smaller arrows indicate general flow directions of latest Late Wisconsin ice (Mathews, 1980; Klassen 1989; Campbell et al., 2001; Fenton pers. comm., 2002; Paulen, 2002). CH = Clear Hills, CM = Caribou Mountains, BHH = Buffalo Head Hills, BM = Birch Mountains, ML = Mountain Lake.

flowing ice in the northern Peace River Valley advanced out of the Peace River Valley from the northwest and flowed over the southwestern flank of the Buffalo Head Hills (Paulen and McClenaghan, in press). This southeasterly surge was deflected by a large mass of surging ice that was flowing south-southwest along the Loon River valley. Thinner ice likely stagnated on top of the Buffalo Head Hills while thicker ice in the valleys continued to actively flow in their proglacial lake settings.

4 Field Methods and Samples

4.1 Sample Distribution

The planned till sample distribution was based upon a minimum sample density of one sample per 16 km^2 with higher sample density, up to one sample per 2 km^2, in the area near the K4 kimberlite complex. Existing AGS till samples with KIM analyses (Table 1), collected along roads in map area 84B/13 prior to 2002, were incorporated into the sampling plan to avoid duplication. At the end of the 2002 field program, till samples had been collected from 55 sites representing an overall average density of approximately one sample per 16 km^2 (Figure 5). In addition to the till samples, one sand-rich sample (2022M) of glaciofluvial (ice-advance proglacial outwash) material was collected beneath 2 m of till.

4.2 Sample Collection

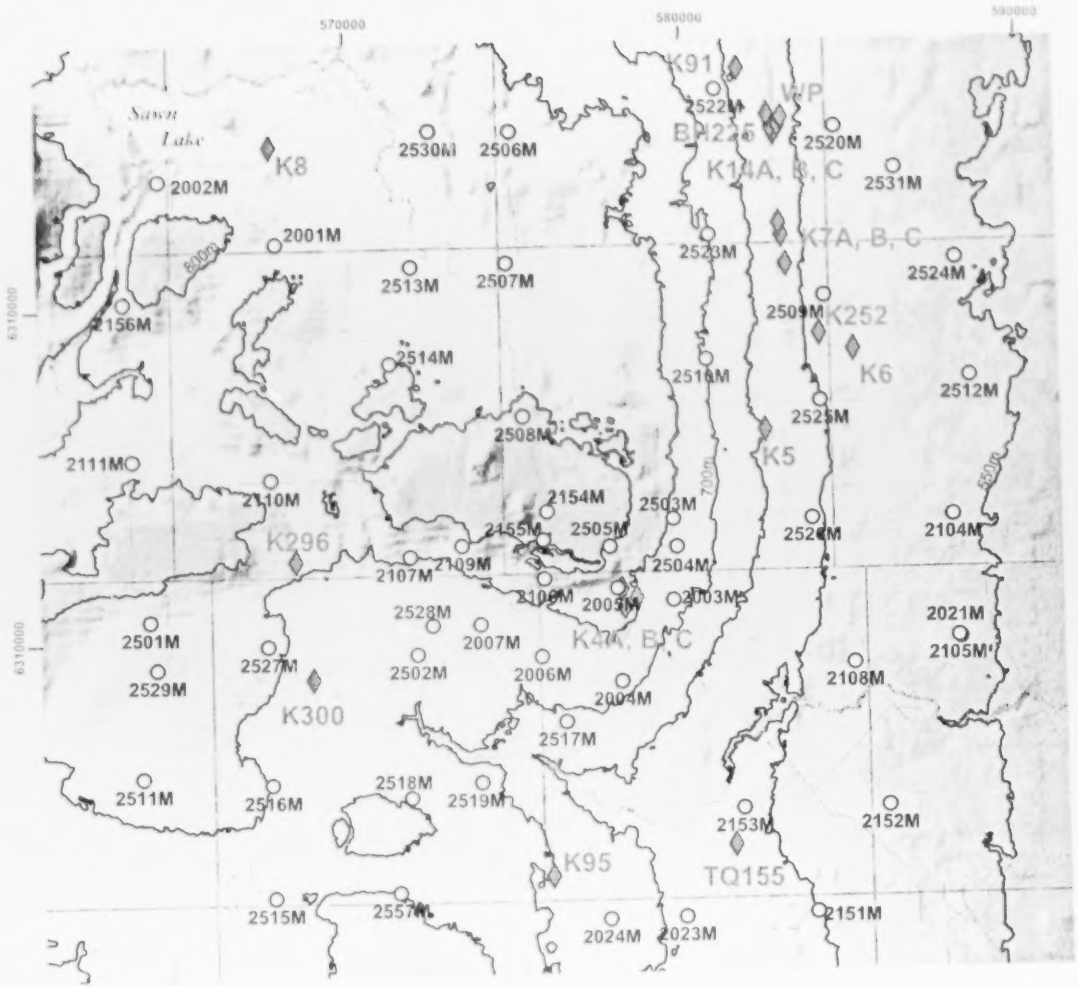
Travel to sites in 2002 was accomplished using trucks, 4-wheel all-terrain vehicles and foot traverses, except for one site that was reached by helicopter. Access to field sites away from roads was commonly along seismic lines. At each till site a pit was dug, generally to a depth at which the till matrix contained calcite, as determined by reaction with dilute (10%) HCl, which is commonly at a depth of 10 to 30 cm below the first appearance of limestone clasts (Figure 6). The till kimberlite-indicator mineral (KIM) sample was then collected from the bottom of the pit over a 20 to 30 cm interval. Sampling intervals away from road cuts typically varied from 55 to 75 cm to 130 to 150 cm. The till to be sampled for indicator minerals was added to a labelled 23-litre (5-gallon) plastic pail until the pail was nearly full (Figure 7). The weight of the KIM samples delivered to the lab for processing generally varied from 25 to 35 kg. After collection of the KIM sample, a sample of till weighting 1 to 2 kg for geochemical analyses of the –63 micron fraction was collected from the bottom of the pit and placed in a labelled plastic bag. Each pair of KIM and associated geochemical samples were assigned the same four numbers with a suffix of M for the KIM (mineralogy) sample and a suffix of G for the geochemical sample (e.g., 2001M and 2001G). Once sampling was completed, the pit was filled in. One pair of glaciofluvial sand samples (2022M and 2022G) were collected during the 2002 program in a manner similar to that described for the till samples. Sample descriptions are provided in Appendix 1.

5 Analytical Methods

5.1 Kimberlite-indicator mineral Picking

5.1.1 Initial Processing and Indicator Mineral Picking at Laboratory-1

All of the pails containing material for kimberlite-indicator mineral processing (56 field samples and 3 QC samples) were submitted to Laboratory-1 (Lab-1). A flowchart in Appendix 2 shows steps taken during sample processing. Each sample was initially wet-screened using 1.00 mm and 0.18 mm screens. The +1.00 mm and –0.18 mm fractions underwent no further processing. The 0.18 to 1.00 mm fraction



Elevation (DEM)

Value

High : 815m

Low : 540m

Sample Site

Kimberlite

Road/Trail

0 1 2 4 6 8

Kilometres

UTM Zone 11, NAD 83

Figure 5.
Sawn Lake (NTS 84B/13) Till Survey, Southern Buffalo Head Hills, Alberta 2002 Sample Sites

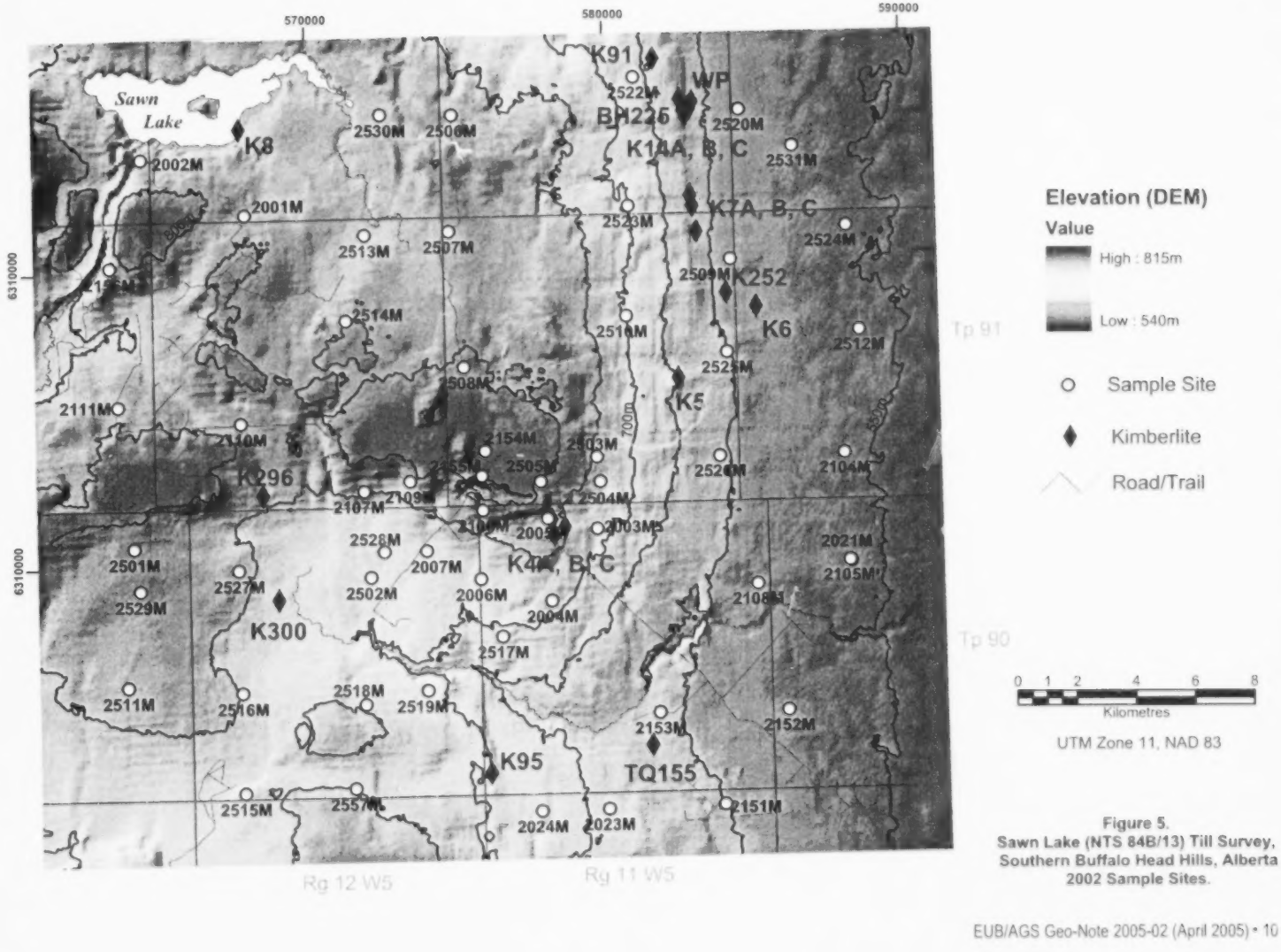


Figure 5.
Sawn Lake (NTS 84B/13) Till Survey, Southern Buffalo Head Hills, Alberta 2002 Sample Sites.

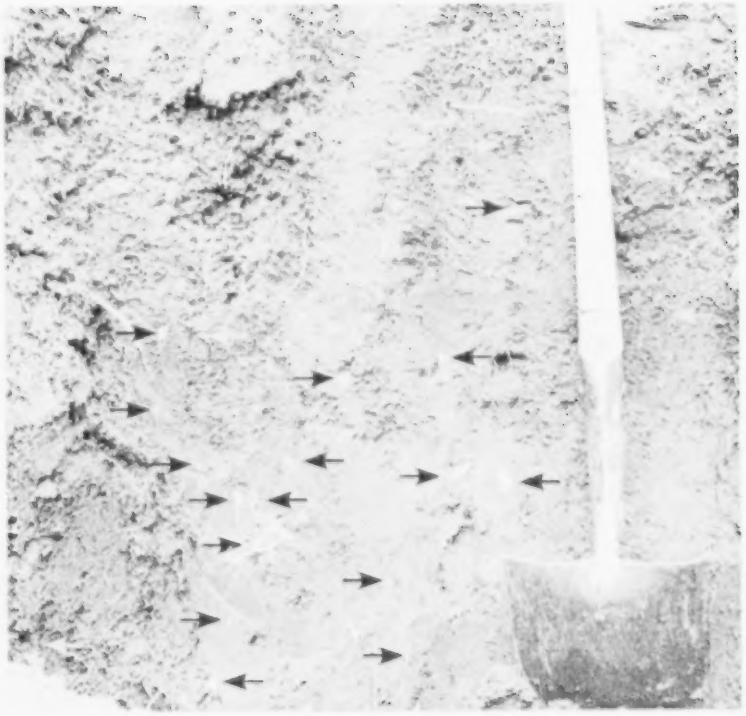


Figure 6. Photograph showing a vertical till exposure prepared for sampling (sample 2525M). Clasts indicated by coloured arrows (red: igneous; yellow: oxidized mudstone; blue: limestone). The shovel handle is marked in centimetres. The 80 cm mark on the shovel handle, below which carbonate clasts are present, is at approximately 80 cm below ground surface.

Figure 7. Photograph showing sample location 2516M, located on old seismic line in the Buffalo Head Hills.

was processed using a shaker table for separation into heavy and light fractions. The heavy fraction from the shaker table was dried and then subjected to a high intensity magnetic separation process that yielded nonmagnetic and magnetic fractions. Ferromagnetic minerals were removed from the magnetic fraction followed by density separation (magstream) of the remaining magnetic fraction to produce fractions having specific gravities of <3.1 and >3.1. Note that heavy liquids were not used for density separation. The heavy fraction (SG>3.1) underwent Frantz magnetic separation at 0.34 amps to produce two fractions designated Frantz Uppers 1 and Frantz Lowers 1 (LW1). The LW1 fraction was then screened into three size fractions:

- 0.50 to 1.00 mm
- 0.25 to 0.50 mm
- 0.18 to 0.25 mm

All or part of the LW1 fractions from each sample was then manually picked, with aid of a microscope, for pyrope, eclogite, Cr-diopside and olivine. The order of picking the fractions was from coarsest to finest. All of the 0.50 to 1.00 mm and 0.25 to 0.50 mm LW1 material was picked for all but three of the samples. Depending upon the amount of LW1 material from each sample, the 0.18 to 0.25 mm LW1 fraction was totally picked, partly picked or not picked. The Frantz Uppers 1 fraction underwent a second Frantz magnetic separation at 0.19 amps to produce the Frantz Uppers 2 and Frantz Lowers 2 fractions. The Frantz Lowers 2 (LW2) fraction was then screened to produce two size fractions: 0.50 to 1.00 and 0.18 to 0.50 mm. Part of the LW2 material was then manually picked, with aid of a microscope, for chromite and picroilmenite. For most samples, the 0.18 to 0.50 mm fraction was picked. Lab-1 grain morphology descriptions are presented in Appendix 3, and Lab-1 indicator mineral picking results are listed in Appendix 4.

5.1.2 First Indicator Mineral Repicking at Lakefield

The 0.25 mm to 1.00 mm LW1 fraction of nine samples from this project, originally picked by Lab-1, were selected and submitted to Lakefield Research Limited of Lakefield, Ontario, to be repicked for indicator minerals (samples 2005 LW1, 2006 LW1, 2007 LW1, 2021 LW1, 2504 LW1, 2505 LW1, 2513 LW1, 2515 LW1, and 2530 LW1). For seven of these samples, Lakefield sieved the LW1 material using a 35 Tyler mesh (0.42 mm) sieve to create +35 and -35 mesh fractions for picking. Results are presented in Appendix 5 and discussed in the quality control section of this report.

5.1.3 Heavy Liquid Separation and Repicking of Indicator Minerals at Laboratory-1

Following the first round of repicking at Lakefield, all of the LW1 and LW2 fractions were returned to Lab-1 for reprocessing and repicking. Reprocessing consisted of recombining the LW1 and LW2 fractions for each sample, following heavy liquid separation (HLS) using methylene iodide (specific gravity of 3.3) to separate the original LW1 and LW2 fractions into material with specific gravity of >3.3 and <3.3. The material with specific gravity of greater than 3.3 was once again separated into LW1 (silicate) and LW2 (oxide) fractions as described in Section 5.1.1. The post-HLS LW1 and LW2 fractions were then repicked by Lab-1, generally in three size fractions: 0.50 to 1.00 mm, 0.25 to 0.50 mm, and 0.18 to 0.25 mm. To assist the repicking process, Lab-1 was made aware of the results for the QC samples from the first round of Lab-1 picking and the results for the nine LW1 fractions repicked at Lakefield (QC results are described in Section 6). In addition, grains of olivine and Cr-diopside from the Buffalo Head Hills K6 kimberlite were sent to Lab-1 to help the individuals picking the samples to recognize these minerals (the olivine grains are pale yellow to nearly colourless). The grain morphology descriptions for the second round of Lab-1 indicator mineral picking are presented in Appendix 3, and the grain counts are listed in Appendix 4.

5.1.4 Second Round of Indicator Mineral Picking at Lakefield

After the methylene iodide separation and repicking of the LW1 (specific gravity >3.3) fraction by Lab-1, the LW1 fractions (specific gravity >3.3) were shipped to Lakefield for the final round of repicking. The grains were picked using the size fractions created by Lab-1, generally 0.50 to 1.00 mm, 0.25 to 0.50 mm, and 0.18 to 0.25 mm (Appendix 6).

5.2 Microprobe and SEM Analysis

Electron microprobe and SEM analyses of selected grains were performed at Lakefield (AGS, unpublished data), and additional electron microprobe analyses were obtained from the University of Alberta (Keith, 2004).

6 Quality Control Results

6.1 Duplicate and Spiked Samples

6.1.1 Grains for Spiked Samples

Grains for spiked samples were selected in the size range 0.25 to 1.0 mm (i.e., shortest axis > 0.25 mm and longest axis < 1.0 mm). Grains were selected at the AGS office with the aid of a binocular microscope.

Cr-diopside: These 50 grains (40 for first spike and 10 for second spike) were selected from a mantle xenolith containing olivine and Cr-diopside collected from surface rubble at a mechanically stripped area on the K6 kimberlite (sample collected by G. Prior in 2002). The xenolith was disaggregated and Cr-diopside grains were picked by hand with the aid of a binocular microscope. The Cr-diopside grains were medium green. Ten of these grains were submitted to Lakefield Research for microprobe analyses. The microprobe results confirmed all ten grains were Cr-diopside.

Olivine: These ten grains were selected from a mantle xenolith containing olivine and Cr-diopside collected from surface rubble at a mechanically stripped area on the K6 kimberlite (sample collected by G. Prior in 2002). The xenolith was disaggregated and olivine grains were picked by hand with the aid of a binocular microscope. These olivine grains were very pale yellow. Ten additional grains, picked the same way, were submitted to Lakefield Research for microprobe analyses. The microprobe results confirmed all ten grains were Mg-rich olivine (forsterite).

Pyrope: These ten grains were selected from the 50 grains returned by Lab-1 that had been picked as pyrope from sample 2005M. Ten additional grains picked as pyrope from sample 2005M were submitted to Lakefield Research for microprobe analyses. All ten grains were confirmed to be pyrope.

Chromite: These ten grains were selected from the 50 grains returned by Lab-1 that had been picked as chromite from sample 2005M. Ten additional grains picked as chromite from sample 2005M were submitted to Lakefield Research for microprobe analyses. All ten grains were confirmed to be chromite.

6.1.2 Spiked Sample Results

2532M: Two pails of till, each about 26 kg, were collected in the field at the site of sample 2505M. This material was subsequently hand-split into two new pails at the Mineral Core Research Facility in Edmonton. The first pail was labelled 2505M and submitted to Lab-1 for processing without further modification. The second pail, assigned sample number 2532M, was spiked with 40 grains of Cr-diopside

before submission to Lab-1. Sample 2505M (without spike) returned no kimberlite-indicator grains when picked by Lab-1. Sample 2532M (with spike) returned 12 clinopyroxene grains and no other kimberlite-indicator minerals when picked by Lab-1 (a recovery rate of 30%; Table 2). Because none of the remaining grains was recovered during subsequent repicking after HLS separation suggests they were lost during processing.

Table 2. Indicator mineral picking results for spiked sample 2532M

Sample 2532M	Picking Session	Pyrope	Eclogitic Garnet	Clinopyroxene	Olivine	Ilmenite	Chromite
spike		0	0	40	0	0	0
recovered grains	Lab-1 pre-HLS	0	0	12	0	0	0
	Lab-1 post-HLS	0	0	0	0	0	0
	Lakefield post-HLS	0	0	0	0	0	0

2560M: Several pails of till were collected in northwestern Alberta near Brownvale in 2002 for AGS quality control (QC) purposes. Two previous samples of till from this site, processed at Lab-1, returned very low indicator mineral counts (one pyrope in one sample and one chromite in the other; samples NAT92-17 and NAT92-19; Dufresne et al., 1996). Three samples of the 2002 Brownvale QC material were submitted for KIM processing and picking at three different laboratories. The results, presented in Table 3, indicate that the Brownvale QC material contains minor amounts of clinopyroxene and chromite, primarily in the <0.5 mm fraction. It appears to be barren of pyrope, eclogitic garnet, olivine and ilmenite.

Table 3. Brownvale QC material indicator mineral picking results

Sample	Laboratory	Bulk Weight (kg)	Size Fraction (mm)	Pyrope	Eclogitic Garnet	Cpx[1]	Olivine	Ilmenite	Chromite
2561M	Lakefield Research Limited	nr[2]	0.42 to 0.84	0	0	1	0	0	0
			0.25 to 0.42	0	0	0	0	0	1
2562M	Overburden Drilling Management Limited	35.7	1.0 to 2.0	0	0	0	0	0	0
			0.5 to 1.0	0	0	0	0	0	0
			0.25 to 0.5	0	0	0	0	0	2
2563M	C.F. Mineral Research Ltd.[3]	33.46	1.0 to 1.7	0	0	0	0	0	0
			0.5 to 1.0	0	0	0	0	0	0
			0.25 to 0.5	0	0	4	0	0	2

[1]Clinopyroxene.

[2]Bulk weight not recorded by laboratory but similar to samples 2562M and 2563M.

[3]C.F. Mineral Research Ltd. results for +1.7 mm fraction and -0.25 mm fractions not shown.

One pail of the Brownvale QC material was selected, assigned sample number 2560M and spiked with ten pyrope grains, ten Cr-diopside grains, ten olivine grains and ten chromite grains. The spiked sample was then submitted to Lab-1 for processing and sample picking. Lab-1 initially recovered seven pyrope grains, one clinopyroxene grain, no olivine grains and six chromite grains from this sample before heavy liquid separation (Table 4). Following heavy liquid separation Lab-1 recovered six pyrope, five clinopyroxene, nine olivine and four chromite grains. Repicking of the post-HLS sample by Lakefield returned an additional two olivine grains. The recovery of more pyrope and olivine grains than contained in the spike suggests that either some of the grains broke during processing or there were pre-existing pyrope and olivine grains in the Brownvale QC material. Upon examination of the 13 pyrope grains

picked from sample 2560M, two of the grains were determined to have maximum axes of less than 0.25 mm, suggesting at least one of the pyrope spike grains broke into smaller pieces during processing.

Table 4. Indicator mineral picking results for spiked sample 2560M

Sample 2560M	Picking Session	Pyrope	Eclogitic Garnet	Cpx[1]	Olivine	Ilmenite	Chromite
spike		10	0	10	10	0	10
recovered grains	Lab-1 pre-HLS	7	0	1	0	0	6
	Lab-1 post-HLS	6	0	5	9	0	4
	Lakefield post-HLS	0	0	0	2	0	0
	total grains recovered	13	0	6	11	0	10

[1]Clinopyroxene.

6.1.3 Duplicate Sample

One pair of duplicate field samples, numbers 2504M and 2533M, was collected in the field and submitted for heavy mineral processing. Results are presented in Table 5, which shows the main kimberlite-indicator mineral in these samples is olivine. The Lakefield post-HLS results for these two samples are indistinguishable, as both samples contained more grains than were picked (>58 olivine grains and >126 olivine grains). The number of olivine grains picked by Lab-1 in both samples is very low compared to the olivine grain counts obtained by Lakefield.

Table 5. Results of indicator mineral picking of duplicate till sample pair 2504M - 2533M

Sample	Picking Session	Pyrope	Eclogitic Garnet	Cpx[1]	Olivine	Ilmenite	Chromite
2504M	Lab-1 pre-HLS	0	0	0	0	0	0
2504M	Lakefield pre-HLS[1]	0	1	0	8	0	0
2504M	Lab-1 post-HLS	0	0	0	9	0	0
2504M	Lakefield post-HLS	0	0	0	>58	0	0
2504M	Total grains recovered	0	1	0	>75	0	0
2533M	Lab-1 pre-HLS	0	0	0	0	0	0
2533M	Lab-1 post-HLS	0	0	0	0	0	0
2533M	Lakefield post-HLS	0	0	1	>126	0	4
2533M	total grains recovered	0	0	1	>126	0	4

1Clinopyroxene.

[1]Nine samples, including 2504M, underwent QC repicking at Lakefield prior to heavy liquid separation.

6.2 Repicking of Selected LW1 Pre-HLS Concentrate Fractions

The LW1 fraction of nine pre-HLS samples, originally picked by Lab-1, was selected and submitted to Lakefield Research to be repicked (Table 6).

Table 6. Pre-HLS indicator mineral repicking results

	Lab-1 LW1 Fraction				Lab-1 LW2 Fraction		Lakefield LW1 Fraction			
Sample	pyrope	cpx[1]	olivine	% picked	chromite	% picked	pyrope	cpx[1]	olivine	chromite
2005 LW1	50+	1	0	50	50+	50	216+	3	21	42
2006 LW1	50	0	0	100	50	100	30	1	0	81+
2007 LW1	41	1	0	100	3	20	23	5	10	10
2021 LW1	0	0	0	100	0	50	0	0	0	0
2504 LW1	0	0	0	100	0	50	0	0	8	0
2505 LW1	0	0	0	100	0	100	0	7	0	1
2513 LW1	0	0	0	100	0	100	0	1	0	0
2515 LW1	0	1	0	100	0	100	1	2	50+	0
2530 LW1	50+	1	0	60	4	50	54+	2	2	1

[1]Clinopyroxene/Cr-diopside

These results indicate the pre-HLS picking by Lab-1 missed a significant number of olivine and Cr-diopside grains (the accuracy of the Lakefield picking of the pre-HLS samples is discussed below). The olivine problem is most evident for sample 2515 LW1 for which Lakefield reports >50 olivine grains and Lab-1 picked zero olivine grains. The high chromite counts in some of the Lakefield samples are interesting as they come from the LW1 fractions (suggesting a significant number of chromite grains were not reporting to the LW2 fractions prepared by Lab-1).

6.3 Resolution of Indicator Mineral Picking Quality Control Issue

After reviewing some of the quality control results presented above, Lab-1 reprocessed the 2002 samples for free using a heavy liquid (methylene iodide) separation. The sink fraction was then divided into LW1

(silicate) and LW2 (oxide) fractions and repicked by Lab-1 staff (see Section 5.1.3). Upon return of the sample material from Lab-1, all of the LW1 (silicate) fractions were shipped to Lakefield for a subsequent round of repicking (see Section 5.1.4). The repicking at Lakefield was undertaken to ensure a high proportion of the olivine and Cr-diopside grains were recovered from the samples.

6.4 Quality of Picked Indicator Mineral Identification

Summaries of electron microprobe data relevant to a discussion of the accuracy of picked grain identification are presented in Table 7, Table 8 and Table 9. These data indicate that grains picked as pyrope, olivine and chromite have a very high probability of having been correctly identified. The success rate for correctly picking Cr-diopside, based on microprobe analyses of grains picked before heavy liquid separation, varies from 42% to 74%. The picking of Cr-diopside was made easier after heavy liquid separation (methylene iodide, specific gravity of 3.30), as Cr-amphibole, which can be visually mistaken for Cr-diopside, was excluded from the sink fraction. Therefore, it is likely the majority of grains picked as Cr-diopside are correctly identified. Only a small number grains were picked as either eclogitic garnet or ilmenite (picroilmenite). The microprobe data obtained on some of these grains suggest these eclogitic garnet and ilmenite picks are highly suspect.

Table 7. Accuracy of Lab-1 pre-HLS picked indicator mineral identification based upon Lakefield microprobe results

Picked Indicator Minerals Examined With Microprobe	Microprobe Results	Picking Identification Accuracy (%)	Comments
140 pyrope	140 pyrope	100%	includes both definite and possible grain identification picks
1 eclogitic garnet	pyrope	0%	picked as a possible grain
11 clinopyroxene	8 clinopyroxene 3 amphibole	73%	includes both definite and possible grain identification picks; amphiboles contain >1.5% Cr_2O_3
4 ilmenite	4 chromite	0%	picked as possible grains
46 chromite	43 chromite 2 ilmenite (low-Cr) 1 leucoxene	93%	picked as possible grains

Table 8. Accuracy of Lakefield pre-HLS picked indicator mineral identification based upon Lakefield Microprobe and SEM results and University of Alberta microprobe results

Picked Indicator Minerals Examined With Microprobe	Microprobe Results	Picking Identification Accuracy (%)	Comments
45 clinopyroxene	19 Cr-diopside 25 Cr-amphibole[1] 1 mica[1]	42%	amphiboles contain >2% Cr_2O_3; Lakefield microprobe results
27 clinopyroxene	20 Cr-diopside 7 clinopyroxene (low-Cr)	74%	University of Alberta microprobe results (Keith, 2004)
3 eclogitic garnet	1 eclogitic garnet 2 crustal garnets	33%	Lakefield microprobe results
20 olivine	20 olivine	100%	Lakefield microprobe results
9 olivine	9 olivine	100%	Lakefield SEM results
6 chromite	6 chromite	100%	Lakefield microprobe results

[1]Lakefield removed misidentified Cr-diopside (Cpx) grains from their reported picking results.

Table 9. Accuracy of Lab-1 post-HLS picked indicator mineral identification based upon Lakefield SEM results

Picked Indicator Minerals Examined With SEM	SEM Results	Picking Identification Accuracy (%)	Comments
150 olivine	147 olivine 1 epidote 2 pyroxene	98%	

7 Results

A summary of indicator mineral picking results for the 2002 samples, based on the data presented in Appendices 3, 4, 5 and 6, is presented in Appendix 7. A map of the Sawn Lake area (NTS 84B/13) showing the distribution of picked pyrope, Cr-diopside (Cpx), olivine and chromite grains is presented in Figure 8.

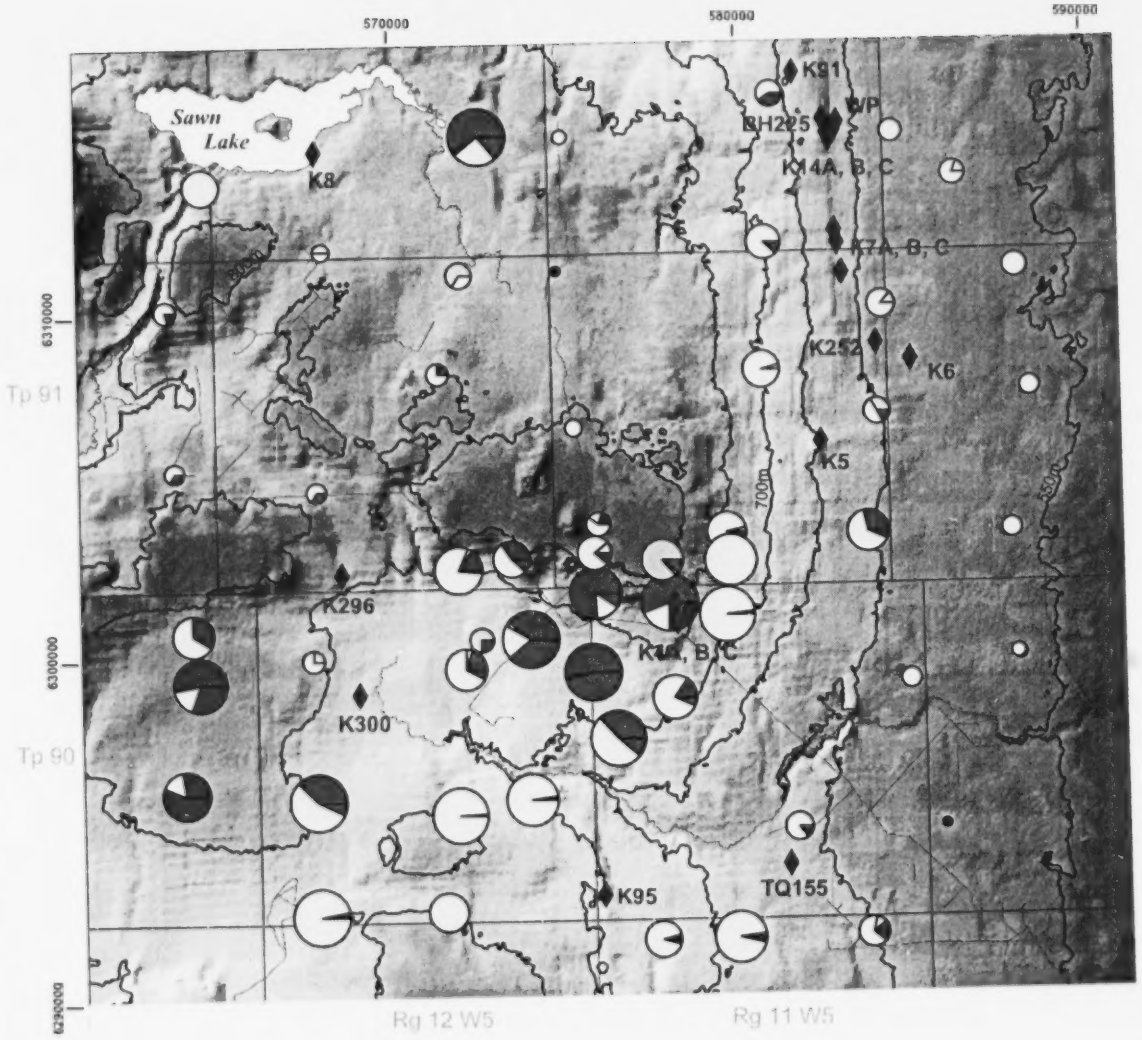


Figure 8.
Sawn Lake (NTS 84B/13) Till Survey, Southern Buffalo Head Hills, Alberta
Picked Kimberlite Indicator Minerals

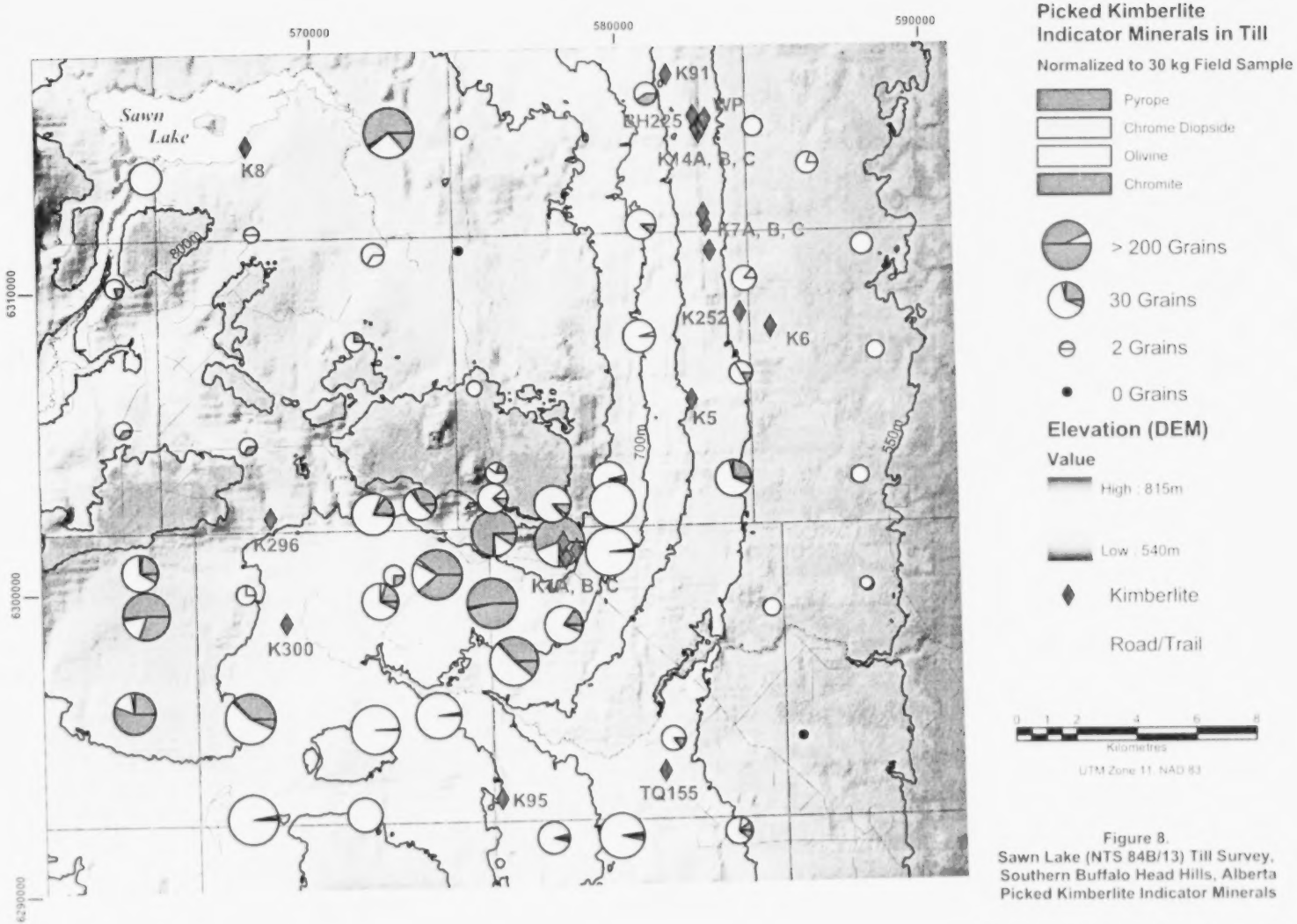


Figure 8.
Sawn Lake (NTS 84B/13) Till Survey, Southern Buffalo Head Hills, Alberta
Picked Kimberlite Indicator Minerals

8 Discussion

The results of the 2002 survey presented in this report, and a previous KIM sampling program of the Peerless Lake (NTS 84B) map area at a lower density by Eccles et al. (2001), clearly show the effectiveness of regional till KIM surveys in identifying areas containing kimberlite in northern Alberta.

Within the Sawn Lake (NTS 84B/13) map area, the distribution of KIM anomalies in till, based on a nominal sample density of one sample per 16 km^2, is quite similar to the distribution of KIM anomalies obtained from a stream sediment heavy mineral concentrate (HMC) survey, based on a nominal sample density of one sample per 25 km^2 (Friske et al., 2003). A significant difference is the presence of a till KIM anomaly east of Sawn Lake (sample 2530M) not replicated in the stream survey due to a lack of suitable streams to sample in the area. Thus, the results suggest either stream sediment HMC or till-indicator mineral surveys may be used as an exploration method for kimberlite-hosted diamonds depending upon availability of sample material.

Kimberlites in the northern part of the Sawn Lake map area (84B/13) belong to the northern group of Buffalo Head Hills kimberlites, which contain higher diamond contents than kimberlites in the southern group (Hood and McCandless, 2004). Till samples from the northeastern part of map area 84B/13, which contains a number of the northern group kimberlites, including the K252 kimberlite (estimated diamond grade of 55 carats per hundred tonnes), are characterized by lacking pyrope and containing generally modest amounts of olivine +/- chromite +/- Cr-diopside (up to 20 picked olivine grains per sample). These results indicate samples containing small numbers of olivine-dominated KIM grains should not be overlooked during exploration.

High counts of pyrope, chromite and olivine grains are common in till samples collected west, west-southwest, and southwest of the K4 kimberlite complex (up to 418 pyrope, 190 chromite and 137 olivine picked grains per sample). The general trend of this pyrope-chromite-olivine anomaly is west-southwest; it is up to 6 km wide and extends for a minimum length of 15 km (from the K4 kimberlite complex to the western limit of the 2002 till survey).

Olivine-dominated KIM assemblages (50% to 100% olivine) with moderate to high grain counts occur in till samples collected east and south of the K4 kimberlites, in the TQ155-K95 area, and west of the K95 kimberlite (up to 150 picked olivine grains per sample). There appears to be a west-southwest–trending demarcation in the southwest quadrant of map area 84B/13 between tills containing pyrope-chromite-olivine KIM assemblages to the north (e.g., in the K300-K4 area) and tills containing olivine-dominant KIM assemblages to the south (e.g., in the K95-TQ155 area).

Surficial materials of the Buffalo Head Hills upland in the northwestern quadrant of map area 84B/13 are dominated by a stagnant ice moraine. The remainder of the map area, at generally lower elevations, is dominated by a moraine deposited as basal till (Paulen et al., 2003; Surficial Geology of the Sawn Lake Area (NTS 84B/13), Trommelen et al., work in progress, 2005). Most of the till samples collected from the area mapped as a stagnant ice moraine returned low KIM counts, with two important exceptions east and south of Sawn Lake. The generally lower KIM counts in the stagnant ice moraine may reflect a higher proportion of distal material in the stagnant ice moraine compared to a higher proportion of proximal material, including KIM grains, in the basal till.

The kimberlite source of the pyrope-olivine-chromite till anomaly east of Sawn Lake (sample 2530M) may not yet have been discovered (Figure 8). The sample contains a very high picked grain count (123 pyropes, 53 olivines and 28 chromites) suggestive of a nearby kimberlite. Advance of the Laurentide ice sheet in the Sawn Lake area during glacial maximum was toward the southwest (Paulen and McClenaghan, in press), and there are no known kimberlites northeast of sample location 2530M. There

is no evidence of westward ice flow, which would be required for the sample 2530M KIM anomaly to have been sourced from the K14, K91, BH225 or WP kimberlites, the most northerly known kimberlites in the area.

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Appendix 1 – Sample Descriptions

Sample Number	East	North	Coordinate System	Vegetation	Physiography	Site Position	Local Relief	Source of Sample	Material	Genesis	Unit Upper Depth (cm)
2001M	568009	6311986	UTM NAD83	forest-conifer: pine (poplar)	ridge(s)	hilltop	2-5 m	section	diamicton	till	0
2002M	564508	6313845	UTM NAD83	forest-mixed: poplar (pine)	undulating	hilltop	2-5 m	hole	diamicton	till	0
2003M	579834	6301421	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	hilltop	>5 m	hole	diamicton	till	
2004M	578296	6298995	UTM NAD83	forest-mixed: poplar (black spruce)	hummock(s)	flat	0-2 m	hole	diamicton	till	0
2005M	578163	6301765	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	small ridge	0-2 m	hole	diamicton	till	0
2006M	575921	6299720	UTM NAD83	forest-conifer: white spruce (poplar)	ridge(s)	hill flank	2-5 m	hole	diamicton	till	0
2007M	574097	6300675	UTM NAD83	forest-mixed: poplar (pine)	ridge(s)	hilltop	2-5 m	hole	diamicton	till	120
2021M	588382	6300329	UTM NAD83	forest-deciduous: poplar	plain	flat	0-2 m	hole	diamicton	till	210
2022M	576097	6301257	UTM NAD83	forest-mixed: white spruce (poplar)	undulating	hill flank	2-5 m	road cut	sand & gravel	glaciofluvial	220
2023M	580195	6292009	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	hill flank	2-5 m	hole	diamicton	till	5
2024M	577935	6291933	UTM NAD83	forest-mixed: white spruce (poplar)	ridge(s)	hill flank	2-5 m	hole	diamicton	till	70
2104M	588144	6303996	UTM NAD83	forest-mixed: poplar (white spruce)	plain	flat	0-2 m	hole	diamicton	till	0
2105M	588330	6300369	UTM NAD83	forest-mixed: poplar (white spruce)	plain	flat	0-2 m	burrow pit	diamicton	till	0
2106M	575995	6302043	UTM NAD83	forest-mixed: poplar (white spruce and fir)	undulating	flat	0-2 m	hole	diamicton	till	50

Sample Number	Minimum Unit Lower Depth (cm)	Colour	Sample Moisture	Disaggregated (Rotten) Clasts	Consistency	Features	Stony	Structure	Matrix Texture
2001M	400	greyish brown	moist	few	soft/sticky		yes	massive	clayey silt
2002M	400	greyish brown	moist	few	soft/sticky		yes	massive	clayey silt
2003M		brown	dry	few	friable	Fe staining	slightly	massive	silty clay
2004M	200	olive brown	moist	few	soft/sticky		slightly	massive	clayey silt
2005M	100	olive brown	moist	few	soft/sticky		slightly	massive	clayey silt
2006M	125	greyish brown	moist	few	soft/sticky			massive	clayey silt
2007M	150	dk greyish brown	moist	none	friable		yes	massive	clayey silt
2021M	400	dk grey	moist	none	hard		yes	massive	clayey silt
2022M	250	brown	dry	few	loose		very	massive	medium sand
2023M	110	brown	moist	few	hard	Cca	slightly	massive	clayey silt
2024M	110	brownish grey	dry	few	very hard		yes	massive	clayey silt
2104M	110	dk greyish brown	moist	few	other	Cca	yes	massive	clayey silt
2105M	600	dk greyish brown	moist	few	soft/sticky	Cca; Fe staining	yes	massive	clayey silt
2106M	105	dk greyish brown	moist	many	very hard		yes	massive	clayey silt

Sample Number	Clasts	Sample QC	Sample Upper Depth (cm)	Sample Lower Depth (cm)	HCl Reaction at Sample Depth	Soil Horizon	Oxidation at Sample Depth
2001M	Quartzite; Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss; Schist	routine	250	300	slight	C	slight
2002M	Quartzite; Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss; Schist	routine	300	350	moderate	C	slight
2003M	Quartzite; Carbonate; Igneous; Gneiss	routine			strong	C	strong
2004M	Quartzite; Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Gneiss; Other	routine	180	200	strong	C	strong
2005M	Quartzite; Carbonate; Cretaceous Sandstone; Siltstone/Mudstone; Igneous; Gneiss; Other	routine	90	100	strong	C	strong
2006M	Athabasca Sandstone; Carbonate; Igneous	routine	85	125		C	slight
2007M		routine	120	150		C	slight
2021M	Quartzite; Athabasca Sandstone; Chert; Carbonate; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss; Other	routine	390	400	moderate	C	none
2022M	Quartzite; Athabasca Sandstone; Chert; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss; Schist	routine	230	250	moderate	C	slight
2023M	Quartzite; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	80	110	strong	C	slight
2024M	Quartzite; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Igneous; Schist	routine	90	120	strong	C	none
2104M	Quartzite; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	80	100	strong	C	slight
2105M	Quartzite; Athabasca Sandstone; Carbonate; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss	routine	150	170	strong	C	strong
2106M	Quartzite; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	85	105	slight	C	slight

Sample Number	Comments
2001M	Exposed section at well site south of Sawn Lake. Less than 5% clasts, moderately fissile; good till. Geochemical sample taken from KIM pail at AGS lab.
2002M	Old well site. Thin veneer of either washed till or glaciofluvial occurs above main till unit. Good Till. Less oxidation than RP02-001.
2003M	Till knob that protrudes above outwash. Matrix texture a sandy silty clay.
2004M	Old logging road through till hummock.
2005M	Old cut line NE of kimberlite K4.
2006M	Seismic line on edge of bog. Many pebbles. Good till. Thin Ae horizon.
2007M	Ridge top with pine trees. 120 cm fine-grained sand above. Slight contamination from sand layer above.
2021M	Burrow pit. Basal till. Bituminous odour.
2022M	Sample of sand beneath till at original high-KIM till site (NAT95-134) near K4 kimberlite. A 2 m till unit overlays the sand (brown, moist, many rotten clasts, hard, strong HCl reaction, stony, massive, clayey silt). Sand is orange, coarse, stony and moderately sorted. Upper contact has abundant cobbles and the till/sand contact is very sharp. 3/4 pail of poorly sorted sand.
2023M	Cut line intersection.
2024M	60 cm of washed material (silty, few pebbles) over good till. Pebble/cobble lag at contact.
2104M	Near Ashton exploration camp. Abundant carbonate clasts
2105M	New burrow pit next to well site road. Pit approximately 6 m deep. Depth of oxidation is 2 m. Gypsum crystals. Minor pink sediment bands with some dipping 30 degrees - possible shearing.
2106M	Half a metre of silty mottled non-calcareous clay overlying till. Gypsum crystals at 85cm - 105cm

Sample Number	East	North	Coordinate System	Vegetation	Physiography	Site Position	Local Relief	Source of Sample	Material	Genesis	Unit Upper Depth (cm)
2107M	571995	6302689	UTM NAD83	forest-deciduous: poplar	hummock(s)	hilltop	0-2 m	hole	diamicton	till	0
2108M	585214	6299571	UTM NAD83	forest-mixed: poplar (white spruce)	plain	flat	0-2 m	hole	diamicton	till	50
2109M	573540	6303026	UTM NAD83	forest-deciduous: poplar	hummock(s)	hill flank	2-5 m	road cut	diamicton	till	0
2110M	567868	6304968	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	hill flank	2-5 m	burrow pit hole	diamicton	till	0
2111M	563741	6305523	UTM NAD83	forest-deciduous: poplar	undulating	hill flank	0-2 m	hole - road cut	diamicton	till	0
2151M	584089	6292167	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	0-2 m	hole	diamicton	till	120
2152M	586237	6295339	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	0-2 m	hole	diamicton	till	15
2153M	581921	6295246	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	0-2 m	burrow pit	diamicton	till	0
2154M	576075	6304059	UTM NAD83	forest-deciduous: poplar (white spruce)	hummock(s)	hill flank	2-5 m	hole	diamicton	till	0
2155M	575958	6303213	UTM NAD83	forest-deciduous: poplar (white spruce)	hummock(s)	flat	0-2 m	hole	diamicton	till	0
2156M	563456	6310223	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	hilltop	2-5 m	hole	diamicton	till	150
2501M	564273	6300732	UTM NAD83	forest-conifer: black spruce (pine)	undulating	flat	0-2 m	hole	diamicton	till	0
2502M	572218	6299784	UTM NAD83	Forest-Mixed: pine (poplar)	hummock(s)	hill flank	0-2 m	hole	diamicton	till	80
2503M	579821	6303852	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	hilltop	2-5 m	hole	diamicton	till	10
2504M	579937	6303017	UTM NAD83	forest-mixed: black spruce (white spruce)	hummock(s)	flat	0-2 m	hole	diamicton	till	5
2505M	577938	6303014	UTM NAD83	forest-deciduous: poplar (white spruce)	hummock(s)	flat	0-2 m	hole	diamicton	till	0
2506M	574968	6315342	UTM NAD83	forest-mixed: white spruce (poplar)	undulating	hill flank	2-5 m	hole	diamicton	till	5
2507M	574856	6311448	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	hill flank	2-5 m	road cut hole	diamicton	till	5

Sample Number	Minimum Unit Lower Depth (cm)	Colour	Sample Moisture	Disaggregated (Rotten) Clasts	Consistency	Features	Stony	Structure	Matrix Texture
2107M	90	dk brown	moist	few	soft/sticky	Cca	yes	massive	sandy clay
2108M	105	dk brown	moist	few	loose	Cca	yes	massive	silty sand
2109M	150	dk greyish brown	moist	few	friable	Cca	yes	massive	clayey silt
2110M	160	dk greyish brown	moist	many	friable		yes	massive	clayey silt
2111M	130	dk greyish brown	moist	few	soft/sticky	Cca; Fe staining	yes	massive	clayey silt
2151M	180	dk greyish brown	moist	few	friable	Cca	yes	massive	clayey silt
2152M	130	dk greyish brown	moist	none	friable		slightly	massive	clayey silt
2153M	350	greyish brown	moist	none	soft/sticky		yes	massive	clayey silt
2154M	180	greyish brown	moist	many	hard	Cca; Fe staining	yes	massive	clayey silt
2155M	130	greyish brown	moist	few	soft/sticky	Cca; Fe staining	yes	massive	clayey silt
2156M	180	greyish brown	moist	few	hard	Cca; Fe staining	yes	massive	clayey silt
2501M	100	dk brown	moist	none	friable		slightly	massive	clayey silt
2502M	110	dk greyish brown	moist	many	soft/sticky		yes	massive	silty clay
2503M	100	greyish brown	moist	few	hard		yes	massive	silty clay
2504M	95	dk greyish brown	moist	none	soft/sticky		yes	massive	silty clay
2505M	110	brownish grey	moist	none	soft/sticky		yes	massive	silty clay
2506M	80	dk greyish brown	moist		soft/sticky		yes	massive	clayey silt
2507M	110	dk greyish brown	moist	none	soft/sticky		yes	massive	silty clay

Sample Number	Clasts	Sample QC	Sample Upper Depth (cm)	Sample Lower Depth (cm)	HCl Reaction at Sample Depth	Soil Horizon	Oxidation at Sample Depth
2107M	Quartzite; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	60	90	strong	C	moderate
2108M	Quartzite; Carbonate; Igneous	routine	75	105	strong	C	strong
2109M	Quartzite; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	130	150	strong	C	moderate
2110M	Quartzite; Athabasca Sandstone; Chert; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	140	160	strong	C	slight
2111M	Quartzite; Athabasca Sandstone; Chert; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	100	130	strong	C	slight
2151M	Carbonate; Igneous	routine	140	180		C	slight
2152M	Carbonate; Igneous	routine	100	130		C	slight
2153M	Carbonate; Igneous	routine	250	280		C	moderate
2154M	Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Gneiss	routine	170	180	moderate	C	moderate
2155M	Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Other	routine	100	130	strong	C	moderate
2156M	Carbonate; Iron-Rich Siltstone/Mudstone; Igneous	routine	170	180	moderate	C	moderate
2501M	Quartzite; Athabasca Sandstone; Siltstone/Mudstone; Igneous; Gneiss	routine	70	100	strong	C	slight
2502M	Quartzite; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous; Schist	routine	80	110	strong	C	not done
2503M	Quartzite; Athabasca Sandstone; Carbonate; Igneous; Gneiss; Schist	routine	80	100	moderate	C	slight
2504M	Athabasca Sandstone; Carbonate; Slst/Mst; Igneous	routine	75	95	strong	C	slight
2505M	Quartzite; Carbonate; Igneous; Gneiss	routine	85	110	strong	C	slight
2506M	Athabasca Sandstone; Carbonate; Igneous	routine	60	80	strong	C	none
2507M	Athabasca Sandstone; Carbonate; Igneous; Gneiss	routine	90	110	strong	C	none

Sample Number	Comments
2107M	West of K4 kimberlite. 2.5 km walk along EW seismic line (thick undergrowth). C horizon at 0.5 m.
2108M	Walked in 1.5 km along cut line. 0.5 m orange-brown silt with minor stones and strong iron oxidation over till. Till from 0.5 to 1.05m.
2109M	
2110M	Old 3 m deep burrow pit. Abundant carbonate clasts-most are rotten.
2111M	Shallow burrow pit on N side of road, 50 m E of road intersection.
2151M	Dug pit in old burrow pit. Good till; many rotten carbonate clasts.
2152M	Open aspen north of cut line. Unusual till as friable and only slightly moist. All crystalline material decomposed.
2153M	South face of overgrown burrow pit. Grey clay along joint faces.
2154M	Pit cut below road on east side of trail. Mottled. A few pebbles of brick-red sandstone. Abundant Fe staining near base of pit (and in geochemical sample).
2155M	Pit dug on east side of road.
2156M	Sloped. Good till. Overlies approximately 20cm of oxidized reddish-brown medium-grained sand.
2501M	Just west of pipeline.
2502M	Seismic line. 0-60 cm: sand; stony with cobbles. 60-80 cm: silty clay; dk grey. 80-110 cm: till; silty clay; dk gray brown (sampled).
2503M	North-south seismic line. Small sand lense within till.
2504M	Seismic line.
2505M	Seismic line. Many large boulders. Few small pebbles.
2506M	Beside quad trail, 200m south of alder swamp. One granitic boulder
2507M	Cut bank next to quad trail.

Sample Number	East	North	Coordinate System	Vegetation	Physiography	Site Position	Local Relief	Source of Sample	Material	Genesis	Unit Upper Depth (cm)
2508M	575358	6306886	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	2-5 m	road cut hole	diamicton	till	0
2509M	584326	6310533	UTM NAD83	forest-deciduous: poplar	other	flat	0-2 m	hole	diamicton	till	110
2510M	580830	6308619	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	2-5 m	hole	diamicton	till	0
2511M	564059	6296083	UTM NAD83	forest-mixed: poplar (pine)	plain	flat	0-2 m	hole	diamicton	till	5
2512M	588651	6308170	UTM NAD83	forest-mixed: poplar (white spruce)	plain	flat	0-2 m	hole	diamicton	till	0
2513M	572019	6311323	UTM NAD83	forest-deciduous: poplar (white spruce)	hummock(s)	hill flank	2-5 m	hole	diamicton	till	5
2514M	571391	6308445	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	0-2 m	hole	diamicton	till	5
2515M	567985	6292543	UTM NAD83	forest-conifer: white spruce	undulating	flat	0-2 m	hole	diamicton	till	5
2516M	567900	6295898	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	flat	0-2 m	hole	diamicton	till	120
2517M	576642	6297798	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	hill flank	2-5 m	cutbank/hole	diamicton	till	5
2518M	572027	6295531	UTM NAD83	forest-mixed: white spruce (poplar)	undulating	flat	0-2 m	hole	diamicton	till	5
2519M	574123	6296000	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	hilltop	2-5 m	hole	diamicton	till	5
2520M	584615	6315547	UTM NAD83	forest-deciduous: poplar	plain	flat	0-2 m	hole	diamicton	till	95
2522M	581079	6316630	UTM NAD83	forest-conifer: white spruce (other)	undulating	hill flank	>5 m	hole	diamicton	till	5
2523M	580900	6312307	UTM NAD83	forest-mixed: white spruce (poplar)	undulating	hill flank	2-5 m	hole	diamicton	till	20

Sample Number	Minimum Unit Lower Depth (cm)	Colour	Sample Moisture	Disaggregated (Rotten) Clasts	Consistency	Features	Stony	Structure	Matrix Texture
2508M	75	dk greyish brown	moist	none	soft/sticky		slightly	massive	clayey silt
2509M	130	dk greyish brown	moist	none	friable		yes	massive	silty clay
2510M	110	dk brown	moist	few	hard sticky		yes	massive	clayey silt
2511M	130	dk grey	moist	none	hard		very	massive	clayey silt
2512M	115	brownish grey	moist	few	friable		yes	massive	silty clay
2513M	100	dk greyish brown	moist	few	soft/sticky		yes	massive	clayey silt
2514M	75	greyish brown	moist	none	hard/sticky		slightly	massive	clayey silt
2515M	115	greyish brown	moist	few	soft/sticky		yes	massive	clayey silt
2516M	160	dk greyish brown	moist	few	soft/sticky		yes	massive	silty clay
2517M	110	greyish brown	dry	none	very hard		yes	massive	clayey silt
2518M	125	dk greyish brown	moist	few	soft/sticky	Cca	yes	massive	silty clay
2519M	110	greyish brown	moist	none	soft/sticky		slightly	massive	clayey silt
2520M	130	dk grey	moist	none	soft/sticky	Cca	yes	massive	silty clay
2522M	110	brown	dry	none	hard		yes	massive	clayey silt
2523M	130	brown	dry	none	hard		yes	massive	clayey silt

Sample Number	Clasts	Sample QC	Sample Upper Depth (cm)	Sample Lower Depth (cm)	HCl Reaction at Sample Depth	Soil Horizon	Oxidation at Sample Depth
2508M	Athabasca Sandstone; Carbonate; Gneiss	routine	55	75	strong	C	none
2509M	Quartzite; Athabasca Sandstone; Cretaceous Sandstone; Igneous	routine	110	130	strong	C	slight
2510M	Athabasca Sandstone; Carbonate; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss	routine	90	110	strong	C	none
2511M	Quartzite; Chert; Igneous	routine	80	125	none	C	slight
2512M	Carbonate; Iron-Rich Siltstone/Mudstone; Igneous	routine	95	115	strong	C	slight
2513M	Quartzite; Athabasca Sandstone; Carbonate; Siltstone/Mudstone; Igneous; Schist	routine	80	100	strong	C	none
2514M	Athabasca Sandstone; Carbonate; Iron-Rich Siltstone/Mudstone; Igneous	routine	55	75	strong	C	none
2515M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss	routine	90	115	strong	C	none
2516M	Quartzite; Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Schist	routine	120	140	strong	C	none
2517M	Carbonate; Siltstone/Mudstone; Igneous; Gneiss	routine	90	110	strong	C	none
2518M	Quartzite; Athabasca Sandstone; Carbonate; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone	routine	115	125	strong	C	slight
2519M	Athabasca Sandstone; Carbonate; Igneous	routine	85	110	strong	C	none
2520M	Quartzite; Carbonate; Siltstone/Mudstone; Igneous	routine	105	130	strong	C	none
2522M	Athabasca Sandstone; Carbonate; Siltstone/Mudstone; Igneous; Gneiss; Schist	routine	90	110	strong	C	none
2523M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Siltstone/Mudstone; Igneous; Gneiss; Schist	routine	110	130	moderate	C	none

Sample Number	Comments
2508M	
2509M	Seismic line. 0-110 cm: Brown silt with very few pebbles (<2%) all less than 2cm across. Good till below with sharp transition.
2510M	
2511M	Pipeline S of Sawn Lake.
2512M	E-W cut line NW of Ashton exploration camp. Till very dry and friable. Sand lense at 70cm.
2513M	Beside trail. Very stony upper 10cm (cobble lag?)
2514M	Unusually silty
2515M	Upper 50 cm is very stony.
2516M	5 - 105 cm: Medium grey brown, grit/granule-poor clay and silt, few pebbles/cobbles/boulders (0.5-2%), possibly water-worked material, similar to last 2 sample sites. 105 - 120 cm: Sand and gravel layer, orange-brown (oxidized) with few cobbles/boulders (quartzite cobbles) and abundant pebbles. 120 - 160 cm: Unit sampled - dark greyish-brown, grit/granule-rich till (good till). Pit dug to 140 cm, probed from 140 to 160 cm. The clasts listed are from the entire pit.
2517M	Contains mudstone cobble with iron oxide rind. Good till.
2518M	Near cut line. Notably clay-rich.
2519M	East of beaver pond. Overall approx. 5-10% very fine to fine irregular sand lenses. Possibly deposited from stagnant ice or water-worked. Sand increases with depth Approx 10% very fine to fine sand.
2520M	Recent well site clearing. Upper unit (5-45 cm): blocky, med grey brown, clayey silt, granule/clast poor. Middle unit (45-95cm): vf sand plus minor silt, no larger clasts. Lower unit (95-130cm): good till, pebbles common. Local seams of very fine-grained, yellow-brown calcite crystals (Cca). Abundant orangey brown local mudstone. Good till.
2522M	
2523M	On cut line.

Sample Number	East	North	Coordinate System	Vegetation	Physiography	Site Position	Local Relief	Source of Sample	Material	Genesis	Unit Upper Depth (cm)
2524M	588214	6311674	UTM NAD83	forest-mixed: white spruce (poplar)	plain	flat	0-2 m	hole	diamicton	till	5
2525M	584210	6307402	UTM NAD83	forest-deciduous: poplar	undulating	hill flank	>5 m	cut bank/hole at side of new road	diamicton	till	5
2526M	583958	6303888	UTM NAD83	forest-mixed: poplar (white spruce)	undulating	hilltop	2-5 m	hole	diamicton	till	5
2527M	567780	6300003	UTM NAD83	forest-deciduous: poplar (white spruce)	undulating	flat	0-2 m	hole	diamicton	till	5
2528M	572670	6300642	UTM NAD83	forest-conifer: pine (poplar)	undulating	flat	0-2 m	hole	diamicton	till	60
2529M	564477	6299302	UTM NAD83	forest-deciduous: poplar	plain	flat	0-2 m	burrow pit	diamicton	till	5
2530M	572552	6315352	UTM NAD83	forest-mixed: poplar (white spruce)	hummock(s)	hill flank	2-5 m	hole	diamicton	till	5
2531M	586410	6314337	UTM NAD83	forest-mixed: poplar (white spruce)	plain	flat	0-2 m	hole	diamicton	till	5
2532M											
2533M											
2557M	571676	6292707	UTM NAD83	forest-mixed: poplar, white spruce	ridge(s)	hill flank	2-5 m	hole	diamicton	till	15

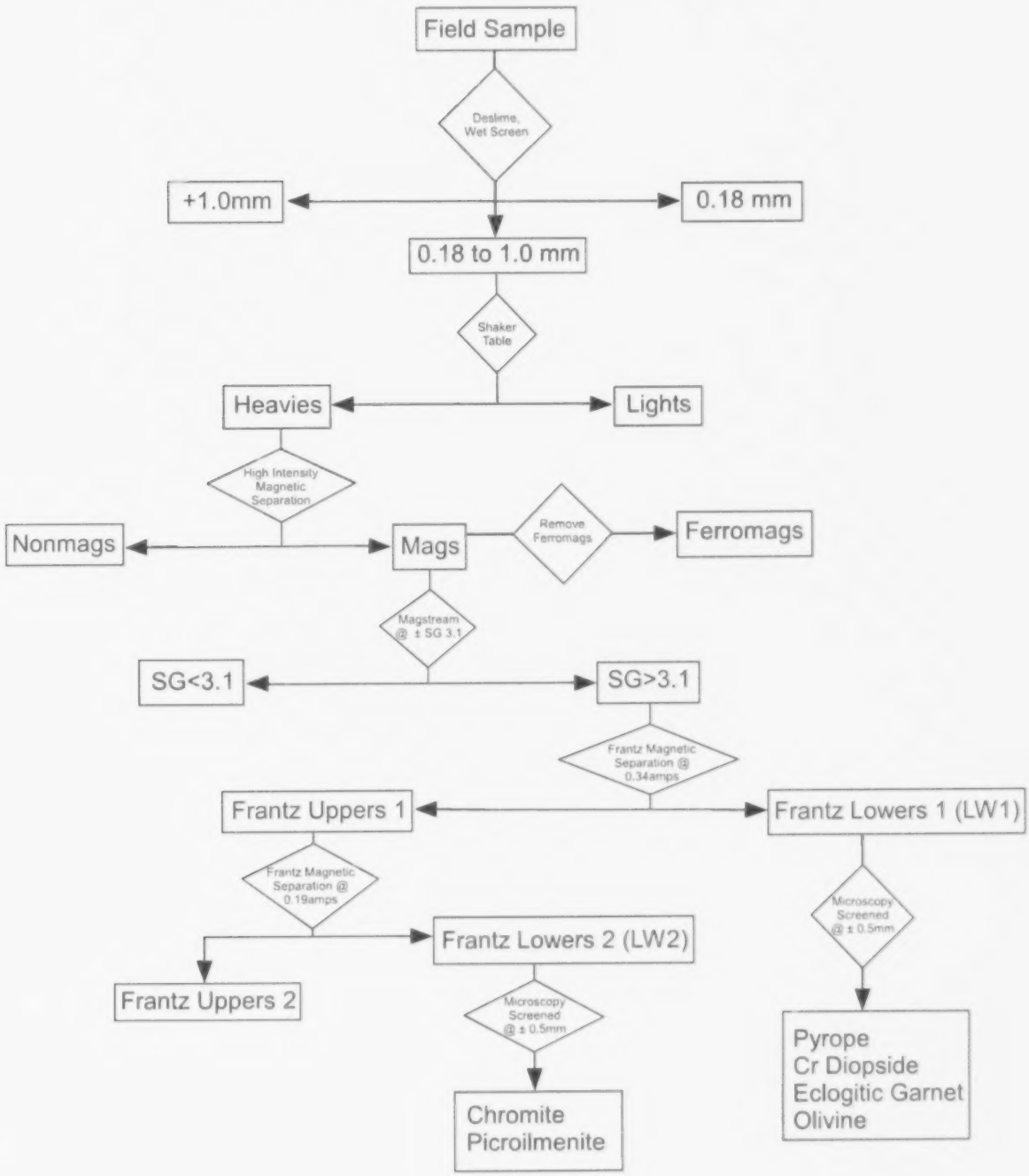
Sample Number	Minimum Unit Lower Depth (cm)	Colour	Sample Moisture	Disaggregated (Rotten) Clasts	Consistency	Features	Stony	Structure	Matrix Texture
2524M	100	greyish brown	moist	none	soft/sticky		slightly	massive	clayey silt
2525M	150	brownish grey	moist	none	soft/sticky		yes	massive	clayey silt
2526M	80	brown	dry	none	very hard		yes	massive	clayey silt
2527M	100	brown	moist	few	soft/sticky		yes	massive	clayey silt
2528M	120	dk grey	moist	none	soft/sticky	Cca	yes	massive	silty clay
2529M	150	greyish brown	moist	few	soft/sticky		yes	massive	silty clay
2530M	100	brown	dry	none	hard		yes	massive	clayey silt
2531M	95	dk grey	dry	few	hard		yes	massive	clayey silt
2532M									
2533M									
2557M	125	brownish-grey	moist	few	soft/sticky		yes	massive	clayey silt

Sample Number	Clasts	Sample QC	Sample Upper Depth (cm)	Sample Lower Depth (cm)	HCl Reaction at Sample Depth	Soil Horizon	Oxidation at Sample Depth
2524M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss	routine	80	100	strong	C	none
2525M	Quartzite; Athabasca Sandstone; Chert; Carbonate; Siltstone/Mudstone; Igneous; Gneiss	routine	130	150	strong	C	none
2526M	Athabasca Sandstone; Carbonate; Siltstone/Mudstone; Igneous; Gneiss	routine	60	80	strong	C	none
2527M	Athabasca Sandstone; Chert; Carbonate; Cretaceous Sandstone; Siltstone/Mudstone; Igneous	routine	80	100	strong	C	none
2528M	Carbonate; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous; Gneiss	routine	100	120	strong	C	none
2529M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Iron-Rich Siltstone/Mudstone; Siltstone/Mudstone; Igneous	routine	120	140	strong	C	none
2530M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Siltstone/Mudstone; Igneous	routine	80	100	strong	C	none
2531M	Athabasca Sandstone; Carbonate; Cretaceous Sandstone; Siltstone/Mudstone; Igneous	routine	75	95	strong	C	none
2532M		spiked field duplicate					
2533M		field duplicate					
2557M	Quartzite; Siltstone/Mudstone; Igneous	routine	95	125	none	lower B	slight

Sample Number	Comments
2524M	Cut line.
2525M	Carbonate clasts begin at 80 cm
2526M	Cut line.
2527M	Cut line.
2528M	On cut line. 5-60cm: vf -f sand with minor silt plus some gravel and 5% boulders. 60-120 cm (sampled unit): dark grey till (sharp transition), pebbles mod common, 1/2% to 1% cobbles, no boulders.
2529M	Abundant iron-rich siltstone/mudstone clasts it till. Bedrock below 1.5 m of till. 1.5-3.0 m = vf-f grained, very poorly consolidated, grey sandstone. Below 3 m: orange-brown (to weakly rusty brown) , oxidized, weakly lithified, silty mudstone; blocky jointing; tends to break in 1 to 2 cm blocks.
2530M	Recent (ddh?) road.
2531M	Cut line.
2532M	Field sample split of 2505M (2 pails of till collected in field hand split by G. Prior at AGS lab into two new buckets); spiked with 40 grains of Cr-diopside [0.25-1.0 mm (mainly 0.5-1.0 mm) grains] picked by G. Prior from K6 mantle nodule.
2533M	Field sample split of 2504M (2 pails of till collected in field hand split by G. Prior at AGS lab into two new buckets); no KIM spike added.
2557M	Logged block. Site accessed by helicopter. 0-15 cm = organic. No limestone clasts noted.

Appendix 2 – Laboratory-1 Kimberlite-Indicator Mineral Sample Processing Flowchart

Laboratory-1 Kimberlite-Indicator Mineral Sample Processing Flowchart (without heavy liquid separation)



Appendix 3 – Laboratory-1 Grain Morphology Descriptions

Minerals:

pyr	Pyrope
cpx	Clinopyroxene (chrome diopside)
ecl	Eclogitic garnet
olv	Olivine
ilm	Ilmenite (picroilmenite)
chr	Chromite

Notes:

def	Definite
pos	Possible
anh	Anhedral
sbhed	Subhedral
euh	Euhedral
rnd	Round
sbrnd	Subround
sbang	Subangular
ang	Angular
orpeel	Orange peel texture
HLS	Heavy liquid separation

*unless otherwise stated, all grains are considered possible

2513M-2515M: Parts of samples 2513M and 2515M were accidentally combined at Lab-1. The combined material was processed as sample "2513M-2515M".

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2003M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	rough	
2003M	1	post-HLS	4/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	vitreous	pitted	
2004M	1	pre-HLS	17/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2004M	1	post-HLS	11/6/03	0.25/+0.18	def pyr	purple	sbhed	angular	translucent	glassy	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	vitreous	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	glassy	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burg	anh	sbrnd	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	included	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	included	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	included	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	included	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	included	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	opaque	vitreous	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	opaque	vitreous	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	orpeel	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	rnd	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	rnd	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	vitreous	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	glassy	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	glassy	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	glassy	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	glassy	smooth	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	glassy	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	ecl	orange	sbhed	sbrnd	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.25/-0.50	cpx	apple green	anh	sbang	translucent	vitreous	rough	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	orpeel	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	ang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	ang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	ang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	ang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbrnd	sbrnd	translucent	vitreous	frosted	granular
2005M	1	post-HLS	17/6/03	-0.50/+0.25	olivine	yellow	sbang	sbang	translucent	vitreous	frosted	granular
2005M	1	post-HLS	17/6/03	-0.50/+0.25	ecl	orange	sbhed	sbrnd	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	ecl	orange	sbhed	sbrnd	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	ecl	orange	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	ecl	orange	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	anh	sbrnd	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbrnd	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	purple	sbhed	sbrnd	transparent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	burgundy	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	burgundy	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	sbhed	sbang	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	sbhed	sbang	transparent	glassy	smooth	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	sbhed	sbang	transparent	glassy	smooth	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	sbhed	sbang	transparent	glassy	smooth	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	violet	sbhed	sbang	transparent	glassy	smooth	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbang	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbang	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbang	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbang	translucent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbang	transparent	vitreous	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbrnd	transparent	glassy	pitted	
2005M	1	post-HLS	17/6/03	0.50/+0.25	def pyr	red	sbhed	sbrnd	translucent	glassy	pitted	
2005M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	red	sbhed	sbrnd	translucent	glassy	pitted	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	included	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	included	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	included	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	rnd	translucent	included	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	rnd	translucent	included	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	rnd	translucent	included	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	glassy	smooth	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	rnd	opaque	vitreous	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbrnd	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	sbang	opaque	metallic	smooth	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	pre-HLS	11/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	rough	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	def pyr	purple	anh	angular	translucent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	ecl	orange	anh	angular	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	-0.50/+0.25	ecl	orange	sbhed	sbang	transparent	glassy	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	anh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	anh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	anh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	anh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	0.50/+0.25	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	euh	ang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	smooth	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2006M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	def pyr	burgundy	anh	sbang	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-1.00/+.50	cpx	apple green	anh	sbrnd	opaque	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	glassy	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	transparent	vitreous	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	included	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	included	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	def pyr	burgundy	anh	ang	included	vitreous	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	orpeel	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	ilm	black	anh	ang	opaque	metallic	rough	
2007M	1	pre-HLS	18/10/02	-0.50/+0.25	ilm	black	anh	ang	opaque	metallic	rough	
2007M	1	post-HLS	17/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-1.00/+0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	pitted	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	pitted	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	pitted	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	euh	ang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	none	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	anh	sbang	opaque	metallic	rough	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	sbang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	vitreous	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	glassy	none	
2007M	1	post-HLS	19/6/03	-0.25/+0.18	def pyr	purple	anh	ang	transparent	glassy	none	
2021M	1	post-HLS	18/06/03	-0.25/+0.18	ecl	orange	anh	sbang	transparent	glassy	smooth	
2021M	1	post-HLS	18/06/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	smooth	broken/two
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	burgundy	anh	sbrnd	translucent	glassy	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	burgundy	anh	sbrnd	translucent	vitreous	rough	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	rough	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	rough	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbang	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	smooth	
2022M	1	pre-HLS	18/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	smooth	
2022M	1	post-HLS	9/6/03	-0.25/+0.18	def pyr	burgundy	anh	ang	transparent	vitreous	coating	pos kelyphite
2022M	1	post-HLS	9/6/03	-0.25/+0.18	pyr	burgundy	anh	ang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	def pyr	purple	anh	sbang	transparent	vitreous	none	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2022M	1	post-HLS	9/6/03	-1.0/+0.50	def pyr	purple	anh	angular	transparent	vitreous	orpeel	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	sbhed	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	anh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-1.0/+0.50	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.25/+0.18	chr	black	sbhed	angular	opaque	metallic	pitted	
2022M	1	post-HLS	9/6/03	-0.25/+0.18	chr	black	sbhed	sbang	opaque	metallic	pitted	
2022M	1	post-HLS	12/6/03	0.25/+0.18	cpx	green	sbhed	sbrnd	translucent	vitreous	smooth	
2022M	1	post-HLS	12/6/03	0.25/+0.18	pyr	purple	sbhed	sbang	transparent	glassy	none	
2022M	1	post-HLS	12/6/03	0.50/+0.25	pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2022M	1	post-HLS	12/6/03	0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2022M	1	post-HLS	12/6/03	0.50/+0.25	chr	black	euh	sbang	opaque	metallic	pitted	
2024M	1	pre-HLS	21/10/02	+0.25/-0.50	pyr	burgundy	sbhed	sbrnd	translucent	glassy	smooth	
2024M	1	pre-HLS	21/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	smooth	
2106M	1	pre-HLS	21/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2106M	1	pre-HLS	21/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	smooth	
2106M	1	pre-HLS	21/10/02	+0.18/-0.50	chr	black	anh	ang	opaque	metallic	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	transparent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	transparent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	ang	transparent	glassy	smooth	
2106M	1	pre-HLS	21/10/02	+0.25/-0.50	def pyr	purple	anh	sbang	transparent	glassy	smooth	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	cpx	green	anh	sbrnd	translucent	vitreous	rough	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	burgundy	anh	sbrnd	transparent	glassy	smooth	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	burgundy	anh	sbrnd	transparent	glassy	smooth	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	burgundy	anh	sbrnd	transparent	glassy	smooth	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	burgundy	anh	sbrnd	transparent	vitreous	rough	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	purple	anh	sbrnd	transparent	vitreous	rough	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	purple	anh	sbrnd	transparent	vitreous	rough	
2106M	1	pre-HLS	22/10/02	+0.25/-0.50	pyr	purple	anh	sbrnd	transparent	vitreous	rough	
2106M	1	post-HLS	28/5/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2106M	1	post-HLS	28/5/03	-0.25/+0.18	pyr	purple	anh	sbang	transparent	glassy	none	
2106M	1	post-HLS	28/5/03	-0.25/+0.18	pyr	purple	anh	ang	transparent	glassy	none	
2106M	1	post-HLS	28/5/03	-0.25/+0.18	pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2107 (x4)M	4	pre-HLS	22/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	glassy	smooth	
2107 (x4)M	4	pre-HLS	22/10/02	+0.25/-0.50	pyr	purple	anh	ang	transparent	vitreous	smooth	
2107M	1	post-HLS	28/5/03	-0.50/+0.25	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2107M	1	post-HLS	28/5/03	-0.50/+0.25	pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2109M	1	post-HLS	29/5/03	-0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	rough	
2109M	1	post-HLS	29/5/03	-0.50/+0.25	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2109M	1	post-HLS	29/5/03	-0.50/+0.25	pyr	purple	sbhed	sbang	transparent	glassy	rough	
2109M	1	post-HLS	29/5/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2109M	1	post-HLS	29/5/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2109M	1	post-HLS	29/5/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2151M	1	post-HLS	29/5/03	-0.25/+0.18	cpx	green	anh	ang	transparent	glassy	none	
2154M	1	pre-HLS	23/10/02	+0.25/-0.50	def pyr	burgundy	anh	ang	transparent	glassy	smooth	
2155M	1	post-HLS	29/5/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2501MM	1	pre-HLS	5/12/2002	+0.18/-1.00	def pyr	purple	sbhed	sbang	translucent	glassy	smooth	
2501MM	1	pre-HLS	5/12/2002	+0.18/-1.00	pyr	burgundy	anh	sbang	translucent	glassy	smooth	
2502M	1	pre-HLS	23/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	glassy	smooth	
2502M	1	pre-HLS	23/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	frosted	
2502M	1	post-HLS	2/6/03	-0.50/+0.25	cpx	green	anh	sbrnd	transparent	vitreous	rough	
2502M	1	post-HLS	2/6/03	-1.00/+0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2502M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbrnd	transparent	glassy	smooth	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2502M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	burgundy	anh	angular	transparent	glassy	smooth	
2502M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	transparent	vitreous	rough	
2502M	1	post-HLS	2/6/03	-0.25/+0.18	cpx	green	sbhed	sbang	transparent	vitreous	rough	
2502M	1	post-HLS	12/6/03	-0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	
2502M	1	post-HLS	12/6/03	0.50/+0.25	pyr	purple	anh	sbang	translucent	glassy	none	
2503M	1	post-HLS	12/6/03	-0.25/+0.18	chr	black	euh	angular	opaque	metallic	smooth	
2503M	1	post-HLS	12/6/03	-0.25/+0.18	chr	black	sbhed	rnd	opaque	metallic	orpeel	
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2504M	1	post-HLS	19/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2505M	1	post-HLS	19/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2509M	1	post-HLS	11/6/03	0.25/+0.18	cpx	green	sbhed	sbrnd	translucent	vitreous	smooth	
2511 (x2)M	2	pre-HLS	25/10/02	+0.18/-0.50	chr	black	sbhed	sbang	opaque	metallic	rough	
2511 (x3)M	3	pre-HLS	25/10/02	+0.18/-0.50	chr	black	sbhed	rnd	opaque	metallic	rough	
2511 (x3)M	3	pre-HLS	25/10/02	+0.25/-0.50	pyr	purple	anh	ang	transparent	vitreous	rough	
2511 (x3)M	3	pre-HLS	4/11/02	+0.25/-0.50	pyr	purple	sbhed	sbang	translucent	glassy	smooth	
2511 (x6)M	6	pre-HLS	25/10/02	+0.25/-0.50	def pyr	purple	anh	ang	translucent	glassy	smooth	
2511M	1	pre-HLS	25/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2511M	1	pre-HLS	25/10/02	+0.25/-0.50	cpx	green	sbhed	sbang	translucent	glassy	smooth	
2511M	1	pre-HLS	25/10/02	+0.25/-0.50	cpx	green	sbhed	sbrnd	transparent	vitreous	rough	
2513M-2515M	1	pre-HLS	4/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbang	opaque	glassy	smooth	
2513M-2515M	1	pre-HLS	4/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	rnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	angular	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	angular	transparent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	euh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	euh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	euh	sbrnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	5/6/03	-0.50/+0.25	olv	yellow	euh	sbrnd	translucent	vitreous	rough	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2513M-2515M	1	post-HLS	6/6/03	-0.25/+0.18	cpx	green	sbhed	rnd	translucent	vitreous	rough	
2513M-2515M	1	post-HLS	6/6/03	-0.25/+0.18	pyr	purple	anh	angular	transparent	glassy	none	
2515M	1	pre-HLS	29/10/02	+0.25/-0.50	cpx	green	anh	ang	translucent	vitreous	granular	
2515M	1	post-HLS	17/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-1.00/+0.50	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-1.00/+0.50	olv	yellow	anh	rnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-1.00/+0.50	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	rough	
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbang	transparent	vitreous	rough	
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	sbhed	sbang	transparent	vitreous	rough	
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	rough	
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	rough	
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	17/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2515M	1	post-HLS	18/6/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	smooth	
2515M	1	post-HLS	18/6/03	0.25/+0.18	pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2516M	6	pre-HLS	29/10/02	+0.25/-0.50	pyr	purple	sbhed	sbrnd	transparent	vitreous	rough	
2516M	7	pre-HLS	29/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	opaque	vitreous	rough	
2516M	3	pre-HLS	29/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	transparent	glassy	smooth	
2516M	10	pre-HLS	29/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2516M	3	pre-HLS	29/10/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbang	opaque	vitreous	rough	
2516M	1	pre-HLS	29/10/02	+0.25/-0.50	cpx	green	sbhed	sbrnd	translucent	vitreous	rough	
2516M	1	pre-HLS	30/10/02	+0.18/-0.50	chr	black	euh	sbang	opaque	metallic	smooth	
2516M	2	pre-HLS	30/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2516M	1	pre-HLS	30/10/02	+0.50/-1.00	ilm	black	anh	rnd	opaque	metallic	rough	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	transparent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	-0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	-1.0/+0.50	def pyr	burgundy	anh	sbrnd	translucent	frosted	none	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	violet	anh	sbang	translucent	vitreous	granular	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	violet	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	violet	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	violet	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-1.0/+0.50	olv	yellow	anh	sbrnd	translucent	frosted	granular	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	def pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	orpeel	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	orpeel	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	burgundy	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	cpx	green	anh	sbrnd	translucent	vitreous	rough	
2516M	1	post-HLS	3/6/03	-0.50/+0.25	cpx	green	anh	sbrnd	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2516M	1	post-HLS	3/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	def pyr	purple	anh	angular	transparent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbang	included	vitreous	none	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	none	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbrnd	included	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	pyr	purple	anh	sbrnd	translucent	vitreous	rough	
2516M	1	post-HLS	3/6/03	0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2516M	1	post-HLS	3/6/03	0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2516M	1	post-HLS	3/6/03	0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	
2516M	1	post-HLS	3/6/03	0.25/+0.18	chr	black	euh	angular	opaque	metallic	pitted	
2517M	6	pre-HLS	30/10/02	+0.25/-0.50	pyr	purple	sbhed	sbang	translucent	glassy	smooth	
2517M	9	pre-HLS	30/10/02	+0.25/-0.50	def pyr	purple	sbhed	ang	translucent	vitreous	smooth	
2517M	12	pre-HLS	30/10/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2517M	3	pre-HLS	31/10/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2517M	1	post-HLS	2/6/03	-0.50/+0.25	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.50/+0.25	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.50/+0.25	pyr	purple	anh	sbang	transparent	glassy	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	glassy	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	glassy	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	glassy	pitted	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	glassy	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	glassy	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbang	translucent	vitreous	none	
2517M	1	post-HLS	2/6/03	-0.25/+0.18	pyr	purple	anh	sbrnd	transparent	vitreous	none	
2517M	1	post-HLS	11/6/03	-0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	rough	
2517M	1	post-HLS	11/6/03	-0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	rough	
2517M	1	post-HLS	11/6/03	-0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	rough	
2517M	1	post-HLS	11/6/03	-0.25/+0.18	pyr	purple	anh	angular	included	vitreous	rough	
2518M	1	post-HLS	2/6/03	-0.50/+0.25	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2518M	1	post-HLS	2/6/03	-0.50/+0.25	uva	green	anh	sbrnd	translucent	vitreous	rough	
2525M	1	post-HLS	3/6/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2526M	1	pre-HLS	1/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2526M	1	pre-HLS	1/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	glassy	smooth	
2526M	1	pre-HLS	1/11/02	+0.25/-0.50	def cpx	apple green	sbhed	sbang	translucent	vitreous	rough	
2526M	1	pre-HLS	1/11/02	+0.18/-0.50	chr	black	euh	sbrnd	opaque	metallic	rough	
2526M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	purple	sbhed	sbang	transparent	glassy	pitted	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2526M	1	post-HLS	3/6/03	-0.50/+0.25	def pyr	violet	sbhed	sbang	transparent	glassy	pitted	
2526M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	glassy	pitted	
2526M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	glassy	rough	
2526M	1	post-HLS	3/6/03	-0.25/+0.18	pyr	purple	sbhed	sbrnd	transparent	glassy	pitted	
2526M	1	post-HLS	3/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	smooth	broken
2527M	1	post-HLS	3/6/03	-0.50/+0.25	ecl	orange	sbhed	sbang	transparent	glassy	none	
2528M	1	post-HLS	3/6/03	-0.50/+0.25	cpx	green	anh	sbrnd	translucent	vitreous	none	
2528M	1	post-HLS	3/6/03	-0.50/+0.25	cpx	green	anh	sbang	translucent	vitreous	rough	
2528M	1	post-HLS	3/6/03	-0.50/+0.25	cpx	green	anh	sbang	translucent	vitreous	none	
2528M	1	post-HLS	3/6/03	-0.50/+0.25	chr	black	euh	angular	opaque	metallic	smooth	
2529M	11	pre-HLS	1/11/02	+0.25/-0.50	pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2529M	2	pre-HLS	1/11/02	+0.25/-0.50	def pyr	burgundy	sbhed	ang	translucent	vitreous	smooth	
2529M	7	pre-HLS	1/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2529M	6	pre-HLS	1/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2529M	1	pre-HLS	1/11/02	+0.25/-0.50	cpx	green	anh	sbrnd	translucent	vitreous	rough	
2529M	1	post-HLS	9/6/03	-1.00/+0.50	def pyr	purple	anh	angular	included	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	sbhed	angular	translucent	vitreous	orpeel	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	sbhed	angular	translucent	vitreous	rough	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	sbhed	angular	translucent	vitreous	rough	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0 25	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	burgundy	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	def pyr	burgundy	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	cpx	green	anh	rnd	opaque	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	olv	yellow	anh	rnd	opaque	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	olv	yellow	anh	rnd	opaque	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	orpeel	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	angular	opaque	metallic	rough	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	angular	opaque	metallic	rough	found in LW1
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	angular	opaque	metallic	rough	found in LW1
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	def pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.25/+0.18	pyr	purple	anh	angular	translucent	vitreous	none	
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	smooth	
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	smooth	
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	smooth	
2529M	1	post-HLS	9/6/03	0.50/+0.25	chr	black	sbhed	rnd	opaque	metallic	smooth	
2529M	1	post-HLS	9/6/03	0.25/+0.18	chr	black	sbhed	rnd	opaque	metallic	smooth	
2530M	2	pre-HLS	4/11/02	+0.25/-0.50	def pyr	burgundy	sbhed	sbrnd	translucent	vitreous	rough	
2530M	2	pre-HLS	4/11/02	+0.25/-0.50	def pyr	burgundy	anh	ang	transparent	glassy	smooth	
2530M	15	pre-HLS	4/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbrnd	translucent	vitreous	rough	
2530M	16	pre-HLS	4/11/02	+0.25/-0.50	def pyr	purple	anh	sbrnd	transparent	glassy	smooth	
2530M	15	pre-HLS	4/11/02	+0.25/-0.50	def pyr	purple	sbhed	sbang	translucent	vitreous	smooth	
2530M	1	pre-HLS	4/11/02	+0.25/-0.50	cpx	green	sbhed	sbrnd	opaque	vitreous	rough	
2530M	1	pre-HLS	4/11/02	+0.18/-0.50	ilm	black	sbhed	ang	opaque	metallic	smooth	
2530M	4	pre-HLS	4/11/02	+0.18/-0.50	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	olv	yellow	sbhed	sbrnd	translucent	vitreous	frosted	granular
2530M	1	post-HLS	19/06/03	-0.25/+0.18	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2530M	1	post-HLS	19/06/03	-0.25/+0.18	olv	yellow	anh	sbang	translucent	vitreous	frosted	granular
2530M	1	post-HLS	19/06/03	-0.25/+0.18	pyr	purple	anh	sbang	included	vitreous	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	pitted	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	smooth	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	anh	sbang	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	anh	sbang	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	chr	black	sbhed	sbrnd	opaque	metallic	rough	broken
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbrnd	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	sbhed	sbang	opaque	metallic	rough	
2530M	1	post-HLS	19/06/03	-0.50/+0.25	chr	black	anh	sbrnd	opaque	metallic	pitted	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2530M	1	post-HLS	19/06/03	-0.25/+0.18	olv	yellow	anh	sbrnd	translucent	vitreous	frosted	granular
2530M	1	post-HLS	19/06/03	-0.25/+0.18	pyr	purple	sbhed	sbang	translucent	vitreous	rough	
2530M	1	post-HLS	19/06/03	-0.25/+0.18	pyr	purple	sbhed	sbang	transparent	glassy	smooth	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	ang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2532M	1	pre-HLS	4/11/02	+0.25/-0.50	def cpx	apple green	anh	sbang	transparent	vitreous	rough	
2560M	1	pre-HLS	3/3/2003	+0.50/-1.0	def cpx	apple green	sbhed	sbang	translucent	vitreous	rough	
2560M	1	pre-HLS	3/3/2003	+0.50/-1.0	def pyr	burg	anh	ang	included	vitreous	none	
2560M	1	pre-HLS	3/3/2003	+0.50/-1.0	def pyr	burg	anh	ang	included	vitreous	none	
2560M	1	pre-HLS	3/3/2003	+0.50/-1.0	chr	blk	euh	sbrnd	opaque	metallic	smooth	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	def pyr	burg	anh	ang	translucent	vitreous	none	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	def pyr	burg	anh	ang	translucent	vitreous	none	

Sample Number	Number of Grains	Batch	Date Picked	Size Fraction (mm)	Grain Type*	Colour	Form	Shape	Clarity	Lustre	Surface Feature	Comment
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	def pyr	burg	anh	ang	translucent	vitreous	none	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	chr	blk	sbhed	sbrnd	opaque	metallic	smooth	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	chr	blk	sbhed	sbrnd	opaque	metallic	smooth	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	chr	blk	sbhed	sbrnd	opaque	metallic	smooth	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	chr	blk	anh	sbang	opaque	metallic	none	
2560M	1	pre-HLS	3/3/2003	+0.25/-0.50	chr	blk	anh	sbang	opaque	metallic	none	
2560M	1	pre-HLS	3/3/2003	+0.18/-0.25	def pyr	burg	anh	ang	translucent	vitreous	none	
2560M	1	pre-HLS	3/3/2003	+0.18/-0.25	def pyr	burg	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	chr	blk	anh	rnd	opaque	metallic	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	chr	blk	sbhed	rnd	opaque	metallic	orpeel	broken
2560M	1	post-HLS	28/05/03	-0.50/+0.25	chr	blk	sbhed	rnd	opaque	metallic	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	chr	blk	sbhed	rnd	opaque	metallic	orpeel	broken
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	sbhed	ang	translucent	glassy	smooth	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	sbhed	ang	translucent	vitreous	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	sbhed	ang	translucent	vitreous	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	sbhed	ang	translucent	vitreous	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	def pyr	purple	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	sbhed	ang	translucent	glassy	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	sbhed	ang	translucent	glassy	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	sbhed	ang	translucent	glassy	orpeel	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	olv	yellow	anh	ang	translucent	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	cpx	green	sbhed	ang	translucent	vitreous	rough	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	cpx	green	sbhed	ang	translucent	vitreous	rough	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	cpx	green	sbhed	ang	translucent	vitreous	rough	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	cpx	green	sbhed	ang	translucent	vitreous	rough	
2560M	1	post-HLS	28/05/03	-0.50/+0.25	cpx	green	sbhed	ang	translucent	vitreous	rough	
2560M	1	post-HLS	28/05/03	-0.25/+0.18	cpx	green	sbhed	ang	opaque	vitreous	none	
2560M	1	post-HLS	28/05/03	-0.25/+0.18	pyr	purple	anh	sbang	opaque	vitreous	rough	

Appendix 4 – Laboratory-1 Indicator Mineral Picking Results

(includes initial Lab-1 picking results and results of Lab-1 repicking after heavy liquid separation)

Minerals:
pyr: Pyrope
cpx: Clinopyroxene (chrome diopside)
ecl: Eclogitic garnet
olv: Olivine
ilm: Ilmenite (picroilmenite)
chr: Chromite

Column Headings:
Original Sample Weight: Weight of field sample received by Lab-1.
Processed Sample Weight: Equals original sample weight except for samples 2513M and 2515M, parts of which were accidentally combined at Lab-1. It is estimated, based upon fraction weights, that the uncombined parts of samples 2513M and 2515M consisted of about 50% of the original sample weights.
Mid-Fraction Weight: Weight of the 0.18 to 1.00 mm material extracted from field sample before further processing.
Pre-HLS LW1 Fraction Weight: Weight of the LW1 (silicate) fraction prepared and picked by Lab-1 before reprocessing using heavy liquid separation.
Pre-HLS LW2 Fraction Weight: Weight of the LW2 (oxide) fraction prepared and picked by Lab-1 before reprocessing using heavy liquid separation.
Methylene Iodide Sink Fraction Weight: Weight of material (recombined LW1 and LW2 fractions) that sank when placed in methylene iodide (S.G. of 3.3) during reprocessing at Lab-1.

Quality Control Samples:
2532M: Field duplicate of sample 2505M spiked with 40 grains of Cr-Diopside.
2533M: Field duplicate of sample 2504M (no spike grains added).
2560M: Brownvale till (AGS quality control material) spiked with 10 pyrope, 10 chromite, 10 Cr-diopside and 10 olivine grains.

Notes:
[1]Parts of samples 2513M and 2515M were accidentally combined during processing at Lab-1. The combined material is identified as sample 2513M-2515M.
[†]Entire sample was not picked; therefore, there are probably additional unpicked grains.
Grains identified during Lab-1 in-house quality control repicking added to initial sample grain counts.
def: Definite (highly probable) visual identification of grain(s) by Lab-1.
pos: Possible visual identification of grain(s) by Lab-1.
nr: Not recorded

Sample	Original Sample Weight (kg)	Processed Sample Weight (kg)	Mid-Fraction Weight (g)	Pre-HLS LW1 Fraction Weight (g)	Pre-HLS LW2 Fraction Weight (g)	Methylene Iodide Sink Fraction Weight (g)	Sample Material	Sample Comment	Before Heavy Liquid Separation										After Heavy Liquid Separation									
									pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos	pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos
2001M	28.15	28.15	3458	13.00	12.68	8.50	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002M	30.55	30.55	5774	21.90	18.01	8.67	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003M	13.45	13.45	3063	22.18	16.03	6.72	till	routine sample	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2004M	18.05	18.05	2668	36.04	13.54	9.21	till	routine sample	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
2005M	23.85	23.85	2775	10.23	14.93	7.74	till	routine sample	50 +	0	1	0	1	0	0	0	0	50 +	50	0	0	0	4	6	0	0	0	50
2006M	29.80	29.80	2291	19.54	3.01	10.14	till	routine sample	50	0	0	0	0	0	0	0	0	50	50	0	0	0	2	0	0	0	0	33
2007M	31.85	31.85	7325	24.86	50.52	29.33	till	routine sample	41	0	1	0	0	0	0	2	0	3	26	0	0	0	0	0	0	0	0	26
2021M	30.30	30.30	1765	5.18	10.09	6.36	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
2022M	23.35	23.35	4661	64.91	54.96	68.03	sand	routine sample	12	0	0	0	0	0	0	0	0	0	12	3	0	1	0	50	0	0	0	22
2023M	26.70	26.70	3633	19.29	20.22	17.45	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024M	27.30	27.30	1377	6.81	9.87	5.21	till	routine sample	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2104M	30.55	30.55	2169	38.27	12.36	5.19	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2105M	31.35	31.35	3610	69.96	11.47	7.10	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2106M	25.50	25.50	3244	21.12	18.14	8.85	till	routine sample	24	7	0	1	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	1
2107M	34.60	34.60	4156	19.55	28.65	16.38	till	routine sample	4	4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
2108M	35.95	35.95	3668	11.48	17.45	9.02	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2109M	35.45	35.45	4490	8.49	21.07	11.81	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	2
2110M	33.55	33.55	5506	18.76	25.26	12.40	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2111M	37.50	37.50	5327	11.76	9.77	nr	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2151M	32.15	32.15	3783	5.63	18.46	10.39	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2152M	29.70	29.70	2561	9.65	13.97	5.30	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2153M	32.25	32.25	2655	16.97	10.46	5.84	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2154M	37.70	37.70	4999	19.72	25.25	10.82	till	routine sample	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2155M	37.45	37.45	6396	28.84	42.98	22.81	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2156M	33.90	33.90	7209	9.45	15.57	nr	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2501M	28.25	28.25	3387	3.26	8.60	nr	till	routine sample	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2502M	34.90	34.90	3864	28.96	27.78	10.80	till	routine sample	2	0	0	0	0	0	0	0	0	0	0	4	0	2	0	0	0	0	0	2

Sample	Original Sample Weight (kg)	Processed Sample Weight (kg)	Mid-Fraction Weight (g)	Pre-HLS LW1 Fraction Weight (g)	Pre-HLS LW2 Fraction Weight (g)	Methylene Iodide Sink Fraction Weight (g)	Sample Material	Sample Comment	Before Heavy Liquid Separation										After Heavy Liquid Separation									
									pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos	pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos
2503M	27.60	27.60	4474	16.02	15.56	8.08	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2504M	23.70	23.70	3277	16.70	12.67	7.42	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0
2505M	25.55	25.55	3161	14.72	7.23	4.26	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2506M	26.80	26.80	2743	24.19	6.39	5.61	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2507M	27.95	27.95	2736	17.79	18.18	8.52	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2508M	26.90	26.90	4039	9.65	15.69	11.71	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2509M	31.50	31.50	4404	15.79	16.55	13.33	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2510M	29.20	29.20	4124	25.86	25.93	16.09	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2511M	25.95	25.95	2539	5.45	9.30	5.54	till	routine sample	6	6	0	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0
2512M	29.20	29.20	2460	9.16	13.89	7.31	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2513M	28.20	14.10	903	3.02	4.79	2.18	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2514M	28.95	28.95	3238	12.84	17.18	9.45	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2515M	25.95	12.98	926	4.44	3.68	2.05	till	routine sample	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	50	0	0	0	1
2516M	28.35	28.35	2669	9.46	25.50	16.55	till	routine sample	23	6	0	1	0	0	0	1	0	3	31	23	0	2	0	34	0	0	0	4
2517M	29.20	29.20	5814	39.19	28.04	19.28	till	routine sample	21	6	0	0	0	0	0	0	0	3	0	25	0	0	0	0	0	0	0	0
2518M	24.75	24.75	1782	10.23	7.31	7.67	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2519M	26.10	26.10	5833	14.84	25.28	11.71	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2520M	28.00	28.00	3763	7.92	17.82	10.09	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2522M	27.05	27.05	4573	12.41	19.01	10.90	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2523M	26.85	26.85	4425	9.17	5.35	3.72	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2524M	28.90	28.90	3738	22.64	18.04	9.61	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2525M	28.45	28.45	3275	15.48	19.62	11.15	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2526M	26.65	26.65	1751	8.12	9.16	5.88	till	routine sample	2	0	1	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	1
2527M	27.70	27.70	2055	6.24	9.67	6.83	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2528M	26.30	26.30	1680	12.75	8.66	6.75	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1
2529M	31.00	31.00	2398	19.15	11.31	5.66	till	routine sample	15	11	0	1	0	0	0	0	0	0	18	15	0	1	0	2	0	0	0	14
2530M	27.95	27.95	2491	9.49	12.89	6.08	till	routine sample	50 +	0	0	1	0	0	0	1	0	4	0	3	0	0	0	5	0	0	0	18

Sample	Original Sample Weight (kg)	Processed Sample Weight (kg)	Mid-Fraction Weight (g)	Pre-HLS LW1 Fraction Weight (g)	Pre-HLS LW2 Fraction Weight (g)	Methylene Iodide Sink Fraction Weight (g)	Sample Material	Sample Comment	Before Heavy Liquid Separation										After Heavy Liquid Separation									
									pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos	pyr_def	pyr_pos	cpx_def	cpx_pos	ecl_pos	olv_pos	ilm_def	ilm_pos	chr_def	chr_pos
2531M	28.60	28.60	2751	10.89	13.18	8.09	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2532M	25.55	25.55	787	4.29	3.12	1.65	till	spiked duplicate of 2505M	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2533M	22.35	22.35	4621	1.64	2.97	nr	till	field duplicate of 2504M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2557M	26.95	26.95	2435	27.39	7.44	nr	till	routine sample	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2560M	34.00	34.00	2761	20.20	8.19	8.19	till	spiked Brownvale till	7	0	1	0	0	0	0	0	0	6	6	1	0	6	0	9	0	0	0	4
2513M-2515M1	nr	nr	3082	8.01	11.91	7.21	till	sample mixed at lab	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	50 +	0	0	0	0

Lab-1 Indicator Mineral Picking Comments:

2007M LW1 (pre-HLS): abundant sulphides

2021M LW1 (pre-HLS): abundant sulphides

2504M LW1 (pre-HLS): 2 pos tourmaline; LW1 (post-HLS): 2 pos tourmaline

2505M LW1 (pre-HLS): 2 pos tourmaline; LW1 (post-HLS): 1 pos tourmaline

2518M LW1 (post-HLS): 1 possible uvarovite grains

2532M LW1 and LW2 (post-HLS): not screened into size fractions

2560M LW1 (pre-HLS): several tourmaline picked, no sulphides observed

2513M-2515M LW1 (post-HLS): olv estimated at 500+; LW2 (post-HLS): not screened into size fractions

Appendix 5 – Lakefield Indicator Mineral Repicking Results Before Heavy Liquid Separation

Minerals:

PYR	Pyrope	OLI	Olivine	MON	Monazite
ECL	Eclogitic garnet	SPN	Spinel	SUL	Sulphide
CPX	Clinopyroxene (Cr-diopside)	APA	Apatite	Cr-AMPH	Cr-amphibole
ILM	Ilmenite (Picroilmenite)	TOUR	Tourmaline	*	Pyrite
CHR	Chromite	CHL	Chlorite	**	Chalcopyrite
EPI	Epidote	RUT	Rutile		

Grains Confirmed By SEM:

ECL in all samples

APA in all samples

CHR in the 0.18 to 0.42 mm fraction of sample 2007 (9 grains)

CPX in the 0.18 to 0.42 mm and 0.42 to 1.00 mm fractions of sample 2505 (7 grains)

Notes:

Sample 2515 LW1 was visually estimated to contain 10% to 12% olivine.

Cr-AMPH grains were picked as possible Cr-diopside grains but microprobe analyses showed them to be Cr-amphiboles (obtained from both size fractions).

CPX[1]: 27 CPX possible grains were obtained (from both size fractions) during a repicking of sample 2505 LW1 but these were not listed in report 8901-273 MI1000-MAR03. Subsequent microprobe analysis at the University of Alberta identified 20 of these grains as Cr-diopside (>0.5 wt.% Cr_2O_3; Nimis and Taylor, 2000).

Sample Number	Size Fraction (mm)	Weight (g)	PYR	ECL	CPX	CPX1	ILM	CHR	EPI	OLI	SPN	APA	TOUR	CHL	RUT	MON	SUL	Cr-AMPH
2005 LW1	0.42 to 1.00	3.94	116	0	0		0	21	25+	10	0	0	25+	25+	0	0	0	9
2005 LW1	0.18 to 0.42	3.62	100+	1	3		0	21	50+	11	0	0	25+	25+	1	1	0	
2006 LW1	0.42 to 1.00	7.67	4	0	0		0	50+	25+	0	1	0	26+	8	0	0	0	0
2006 LW1	0.18 to 0.42	9.20	26	0	1		0	31	25+	0	0	0	25+	17	0	0	0	
2007 LW1	0.42 to 1.00	12.67	2	0	0		0	1	25+	6	0	0	25+	5	0	0	0	6
2007 LW1	0.18 to 0.42	14.90	21	1	5		0	9	29	4	1	0	25+	20	2	2	1*	
2021 LW1	0.42 to 1.00	2.42	0	0	0		0	0	25+	0	0	0	25+	0	0	1	25*	0
2021 LW1	0.18 to 0.42	2.76	0	0	0		0	0	25+	0	0	0	26+	0	0	0	0	
2504 LW1	0.42 to 1.00	6.05	0	0	0		0	0	25+	4	0	2	25+	1	0	0	0	0
2504 LW1	0.18 to 0.42	10.63	0	1	0		0	0	25+	4	0	0	38+	3	2	0	1**	
2505 LW1	0.42 to 1.00	4.97	0	0	2	20	0	0	25+	0	0	0	25+	0	0	0	0	0
2505 LW1	0.18 to 0.42	9.62	0	0	5		0	1	27+	0	0	0	33+	3	0	0	0	
2513 LW1	0.18 to 1.00	2.87	0	0	1		0	0	25+	0	0	2	28+	0	0	0	0	0
2515 LW1	0.42 to 1.00	1.36	0	0	2		0	0	25+	25+	0	0	16	0	0	0	0	0
2515 LW1	0.18 to 0.42	3.04	1	0	0		0	0	25+	25+	0	1	25+	0	0	0	0	
2530 LW1	0.18 to 1.00	9.32	54+	0	2		0	1	31+	2	1	1	37+	3	0	1	0	10

Lakefield indicator mineral picking results before heavy liquid separation.

Appendix 6 – Lakefield Indicator Mineral Repicking Results and SEM Data After Heavy Liquid Separation

Picked Minerals:

Pyr	Pyrope
Ecl	Eclogitic Garnet
Cpx	Clinopyroxene (Cr-diopside)
Ilm	Ilmenite
Chr	Chromite
Oli	Olivine
Epi	Epidote
Spn	Spinel
Apa	Apatite
Tour	Tourmaline
Chl	Chlorite*
Rut	Rutile
Mon	Monazite
Sul	Sulphide
Flor	Florencite

Other Minerals:

Alm	Almandine
Amph	Amphibole
Anda	Andalusite
Bar	Barite
Diop	Diopside
Hem	Hematite
Opx	Orthopyroxene
Pyx	Pyroxene

*chlorite was on the list of minerals to be picked but none was observed

Other Abbreviations:

na	Not available
Flor[1]	SEM identified florencite grains that were picked as monazite
Ilm[1]	SEM identified ilmenite grains that were picked as chromite

Column Descriptions:

Visually Identified Grains: Grains immediately recognized as the target mineral.

SEM Identified Grains: Suspect grains checked and confirmed by SEM (not included in Visually Identified column).

All Picked Grains: All visually and SEM identified grains.

Estimated Total Grains: Based upon proportion of sample picked (equal to All Picked column if 100% picked). A "+" indicates that not all of the sample was picked but the amount of unpicked sample was not recorded.

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2001 LW1	0.42 - 1.00	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2001 LW1	0.25 - 0.42	1.01	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0.0		0
2001 LW1	0.18 - 0.25	0.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2002 LW1	0.42 - 1.00	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2002 LW1	0.25 - 0.42	0.99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2002 LW1	0.18 - 0.25	0.98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2003 LW1	0.42 - 1.00	0.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2003 LW1	0.25 - 0.42	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2003 LW1	0.18 - 0.25	0.42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2004 LW1	0.42 - 1.00	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2004 LW1	0.25 - 0.42	1.16	2	0	2	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0.0		0
2004 LW1	0.18 - 0.25	0.79	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2005 LW1	0.42 - 1.00	0.94	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2005 LW1	0.25 - 0.42	0.96	50	1	51	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2005 LW1	0.18 - 0.25	0.47	50	0	50	200	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0.0		0
2006 LW1	0.42 - 1.00	1.03	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2006 LW1	0.25 - 0.42	0.88	30	7	37	37	5 Alm	0	1	1	1	2 Anda	0	0	0	0	0	0	4	4	4.0	Ilm[1]	0
2006 LW1	0.18 - 0.25	0.45	48	3	51	51	2 Alm	0	0	0	0	0	1	0	1	1	0	0	2	2	2.0	Ilm[1]	0
2007 LW1	0.42 - 1.00	4.37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2007 LW1	0.25 - 0.42	10.21	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2007 LW1	0.18 - 0.25	1.75	37	3	40	40	4 Alm	0	0	0	0	0	0	2	2	2	4	2 Diop, 2 Amph	0	0	0.0		0
2021 LW1	0.42 - 1.00	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2021 LW1	0.25 - 0.42	0.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2021 LW1	0.18 - 0.25	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Oly	SEM Identified Oly	All Picked Oly (Visually and SEM Identified)	Estimated Total Oly	Suspect Oly That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2001 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	28	0	0	0	0	0	0	0	0	0	0	0
2001 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	250	0	0	1	1	1	0	0	0	0	0	0
2001 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	100	0	1	0	1	1	0	0	0	0	0	0
2002 LW1	0	0	0	0.0	0	4	2	6	6	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0
2002 LW1	0	0	0	0.0	0	14	3	17	17	0	25	0	25	250	0	2	2	4	4	0	0	0	0	0	0
2002 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	250	0	2	2	4	4	0	0	0	0	0	0
2003 LW1	0	0	0	0.0	0	12	0	12	12	0	25	0	25	28	0	0	0	0	0	0	0	0	0	0	0
2003 LW1	0	0	0	0.0	0	49	0	49	49	0	25	0	25	100	0	1	0	1	1	0	0	0	0	0	0
2003 LW1	0	0	0	0.0	0	23	0	23	23	0	25	0	25	100	0	2	0	2	2	0	0	0	0	0	0
2004 LW1	1	0	1	1.0	0	8	0	8	8	1 Opx	25	0	25	26	0	1	0	1	1	0	0	0	0	0	0
2004 LW1	0	0	0	0.0	0	12	0	12	12	0	25	0	25	50	0	1	0	1	1	0	0	0	0	0	0
2004 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	50	0	2	1	3	3	0	0	0	0	0	0
2005 LW1	1	3	4	4.0	0	10	0	10	10	0	25	0	25	25	0	0	0	0	0	0	0	0	0	0	0
2005 LW1	28	4	32	32.0	0	50	0	50	51	0	25	0	25	50	0	2	0	2	2	0	0	0	0	0	0
2005 LW1	12	0	12	12.0	0	50	0	50	61	0	25	0	25	50	0	1	0	1	1	0	0	0	0	0	0
2006 LW1	1	1	2	2.0	0	2	0	2	2	0	25	0	25	100	0	0	1	1	1	0	0	0	0	0	0
2006 LW1	7	12	19	19.0	4 Ilm	2	0	2	2	0	25	0	25	250	0	0	1	1	1	0	0	0	0	0	0
2006 LW1	2	4	6	6.0	2 Ilm	2	0	2	2	0	25	0	25	100	0	0	3	3	3	0	0	0	0	0	0
2007 LW1	12	3	15	15.0	0	0	0	0	0	0	5	0	5	5	0	0	0	0	0	0	0	0	0	0	0
2007 LW1	34	30	64	76.7	14 Ilm, Hem	1	0	1	1	0	25	0	25	42	0	0	2	2	2	0	0	0	0	0	0
2007 LW1	0	10	10	10.0	12 Ilm, Hem	50	4	54	60	2 Pyx	25	0	25	500	0	5	0	5	5	0	0	0	0	0	0
2021 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0
2021 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	125	0	0	0	0	0	0	0	0	0	0	0
2021 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	250	0	1	1	2	2	0	0	0	0	0	0

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2001 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2001 LW1	8	0	8	8	0	1	0	1	1	0	6	0	6	6	0	10	0	10	10	0	na	na	na	na	
2001 LW1	25	0	25	50	0	8	0	8	8	0	25	0	25	50	0	25	0	25	41	0	na	na	na	na	
2002 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2002 LW1	24	0	24	24	0	1	0	1	1	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	
2002 LW1	25	0	25	25	0	1	0	1	1	0	2	0	2	2	0	0	0	0	0	0	na	na	na	na	
2003 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2003 LW1	4	0	4	4	0	0	0	0	0	0	1	0	1	1	0	1	0	1	1	0	na	na	na	na	
2003 LW1	12	0	12	12	0	5	0	5	5	0	25	0	25	25	0	1	0	1	1	0	na	na	na	na	
2004 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2004 LW1	6	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2004 LW1	25	0	25	25	0	5	0	5	5	0	6	0	6	6	0	0	0	0	0	0	na	na	na	na	
2005 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2005 LW1	9	0	9	9	0	1	0	1	1	0	3	0	3	3	0	1	0	1	1	0	na	na	na	na	
2005 LW1	25	0	25	125	C	12	0	12	12	0	17	0	17	17	0	6	0	6	6	0	na	na	na	na	
2006 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2006 LW1	7	0	7	7	0	3	0	3	3	0	6	2	8	8	0	1	0	1	1	0	na	na	na	na	
2006 LW1	25	0	25	25	0	21	0	21	21	0	16	1	17	17	0	4	0	4	4	0	na	na	na	na	
2007 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2007 LW1	6	0	6	6	0	0	0	0	0	0	9	0	9	9	0	2	0	2	2	0	na	na	na	na	
2007 LW1	25	0	25	50	0	13	0	13	13	0	25	0	25	25	0	7	0	7	7	0	na	na	na	na	
2021 LW1	2	0	2	2	0	1	0	1	1	0	0	0	0	0	0	25	0	25	25	0	na	na	na	na	Present
2021 LW1	25	0	25	25	0	0	0	0	0	0	0	0	0	0	0	25	0	25	25	0	na	na	na	na	
2021 LW1	25	0	25	83	0	0	0	0	0	0	7	0	7	7	0	25	0	25	25	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2022 LW1	0.50 - 1.00	7.81	0	0	0	0	0	0	1	1	1	1 Diop	0	0	0	0	0		0	2	2	2.0	llm'	0
2022 LW1	0.25 - 0.50	5.88	2	1	3	3	0	0	0	0	0	0	0	0	0	0	0		0	2	2	2.0	llm'	0
2022 LW1	0.18 - 0.25	2.16	7	0	7	7	0	0	0	0	0	0	1	0	1	1	0		0	1	1	1.0	llm'	0
2023 LW1	0.42 - 1.00	1.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2023 LW1	0.25 - 0.42	0.92	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2023 LW1	0.18 - 0.25	0.85	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0		0	0	0	0.0		0
2024 LW1	0.42 - 1.00	0.78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2024 LW1	0.25 - 0.42	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2024 LW1	0.18 - 0.25	0.27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2104 LW1	0.42 - 1.00	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2104 LW1	0.25 - 0.42	0.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2104 LW1	0.18 - 0.25	0.31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2105 LW1	0.42 - 1.00	0.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2105 LW1	0.25 - 0.42	0.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2105 LW1	0.18 - 0.25	0.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2106 LW1	0.42 - 1.00	0.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2106 LW1	0.25 - 0.42	0.84	12	1	13	13	0	0	1	1	1	1 Anda	0	0	0	0	0		0	0	0	0.0		0
2106 LW1	0.18 - 0.25	0.76	14	2	16	16	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2107 LW1	0.42 - 1.00	2.10	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2107 LW1	0.25 - 0.42	1.41	0	1	1	1	0	0	0	0	0	0	0	1	1	1	0		0	0	0	0.0		0
2107 LW1	0.18 - 0.25	1.20	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0		0	0	0	0.0		0
2108 LW1	0.42 - 1.00	1.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2108 LW1	0.25 - 0.42	0.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2108 LW1	0.18 - 0.25	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Olv	SEM Identified Olv	All Picked Olv (Visually and SEM Identified)	Estimated Total Olv	Suspect Olv That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2022 LW1	0	3	3	3.0	2 Ilm	50	0	50	56	0	25	0	25	125	0	0	0	0	0	0	0	0	0	0	0
2022 LW1	5	1	6	6.0	2 Ilm	50	0	50	250	0	25	0	25	250	0	3	3	6	6	0	0	0	0	0	0
2022 LW1	1	1	2	2.0	1 Ilm	50	0	50	250	0	25	0	25	250	0	4	11	15	15	0	0	1	1	1	0
2023 LW1	0	3	3	3.0	2 none	12	0	12	12	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2023 LW1	0	0	0	0.0	0	32	0	32	32	0	25	0	25	250	0	1	0	1	1	0	0	0	0	0	0
2023 LW1	0	0	0	0.0	0	27	0	27	27	0	25	0	25	250	0	2	0	2	2	0	0	0	0	0	0
2024 LW1	0	0	0	0.0	0	4	0	4	4	0	25	0	25	28	0	0	0	0	0	0	0	0	0	0	0
2024 LW1	0	0	0	0.0	0	13	0	13	13	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2024 LW1	0	0	0	0.0	0	2	1	3	3	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2104 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	28	0	0	0	0	0	0	0	0	0	0	0
2104 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	250	0	0	0	0	0	0	1	0	1	1	0
2104 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	250	0	1	0	1	1	0	1	0	1	1	0
2105 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0
2105 LW1	0	0	0	0.0	0	0	0	0	0	1 Bar	25	0	25	100	0	0	0	0	0	0	0	0	0	0	0
2105 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	250	0	0	0	0	0	0	0	0	0	0	0
2106 LW1	0	0	0	0.0	0	5	0	5	5	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2106 LW1	0	2	2	2.0	0	8	0	8	8	0	25	0	25	250	0	1	0	1	1	0	0	0	0	0	0
2106 LW1	0	2	2	2.0	0	0	0	0	0	0	25	0	25	250	0	1	3	4	4	0	0	0	0	0	0
2107 LW1	0	0	0	0.0	0	12	0	12	12	0	25	0	25	25	+ 0	0	0	0	0	0	0	1	1	1	0
2107 LW1	0	1	1	1.0	0	29	0	29	29	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2107 LW1	0	0	0	0.0	0	18	0	18	18	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2108 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2108 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	50	0	0	1	1	1	0	0	0	0	0	0
2108 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	83	0	0	4	4	4	0	0	0	0	0	0

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2022 LW1	2	0	2	2	0	5	0	5	5	0	5	0	5	5	0	0	0	0	0	0	25	0	25	41.7	
2022 LW1	25	0	25	167	0	7	0	7	7	0	25	1	26	130	0	na	0	na	0	0	na	na	na	na	
2022 LW1	25	0	25	250	0	25	0	25	25	+ 0	25	0	25	500	0	0	0	0	0	0	na	na	na	na	
2023 LW1	0	0	0	0	0	0	0	0	0	0	0	5	5	5	0	0	0	0	0	0	na	na	na	na	
2023 LW1	25	0	25	25	0	1	0	1	1	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	
2023 LW1	25	0	25	25	0	6	0	6	6	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	
2024 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	Present
2024 LW1	1	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	na	na	na	na	
2024 LW1	25	2	27	27	0	5	0	5	5	0	10	0	10	10	0	2	0	2	2	0	na	na	na	na	
2104 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2104 LW1	10	0	10	10	0	0	0	0	0	0	2	0	2	2	0	1	0	1	1	0	na	na	na	na	
2104 LW1	25	0	25	25	0	5	0	5	5	0	17	0	17	17	0	9	0	9	9	0	na	na	na	na	
2105 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2105 LW1	12	0	12	12	0	2	0	2	2	0	8	0	8	8	0	11	0	11	11	0	na	na	na	na	
2105 LW1	25	0	25	25	0	10	0	10	10	0	7	0	7	7	0	5	0	5	5	0	na	na	na	na	
2106 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	na	na	na	na	
2106 LW1	23	0	23	23	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	
2106 LW1	25	0	25	25	0	7	0	7	7	0	0	7	7	7	0	0	0	0	0	0	na	na	na	na	
2107 LW1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2107 LW1	25	0	25	25	0	0	0	0	0	0	3	1	4	4	0	0	0	0	0	0	na	na	na	na	
2107 LW1	25	0	25	33	0	0	0	0	0	0	5	1	6	6	0	0	0	0	0	0	na	na	na	na	
2108 LW1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2108 LW1	25	0	25	25	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	na	na	na	na	
2108 LW1	25	0	25	33	0	8	0	8	8	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2109 LW1	0.42 - 1.00	1.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2109 LW1	0.25 - 0.42	1.11	0	3	3	3	0	0	0	0	0	0	0	1	1	1	1 Diop	0	0	0	0.0		0
2109 LW1	0.18 - 0.25	1.04	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2110 LW1	0.42 - 1.00	1.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2110 LW1	0.25 - 0.42	1.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2110 LW1	0.18 - 0.25	1.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2111 LW1	0.25 - 1.00	1.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2111 LW1	0.18 - 0.25	0.71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2151 LW1	0.42 - 1.00	1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2151 LW1	0.25 - 0.42	1.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2151 LW1	0.18 - 0.25	0.56	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2152 LW1	0.42 - 1.00	0.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2152 LW1	0.25 - 0.42	0.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2152 LW1	0.18 - 0.25	0.29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2153 LW1	0.42 - 1.00	0.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2153 LW1	0.25 - 0.42	0.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2153 LW1	0.18 - 0.25	0.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2154 LW1	0.42 - 1.00	1.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2154 LW1	0.25 - 0.42	1.28	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0.0		0
2154 LW1	0.18 - 0.25	0.95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2155 LW1	0.42 - 1.00	1.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2155 LW1	0.25 - 0.42	2.08	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0.0		0
2155 LW1	0.18 - 0.25	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Oly	SEM Identified Oly	All Picked Oly (Visually and SEM Identified)	Estimated Total Oly	Suspect Oly That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2109 LW1	0	0	0	0.0	0	6	0	6	6	0	25	0	25	25 +	0	0	0	0	0	0	0	0	0	0	0
2109 LW1	0	0	0	0.0	0	10	0	10	10	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2109 LW1	0	1	1	1.0	0	0	0	0	0	0	25	0	25	100	0	0	2	2	2	0	0	0	0	0	0
2110 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	26	0	0	2	2	2	0	0	0	0	0	0
2110 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	26	0	0	1	1	1	green Pyr	0	0	0	0	0
2110 LW1	0	1	1	1.0	0	0	0	0	0	0	25	0	25	50	0	0	2	2	2	0	0	1	1	1	0
2111 LW1	0	0	0	0.0	0	3	0	3	3	0	25	0	25	83	0	0	2	2	2	0	0	0	0	0	2 Bar
2111 LW1	0	1	1	1.0	0	0	0	0	0	0	25	0	25	250	0	0	0	0	0	0	0	0	0	0	2 Bar
2151 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2151 LW1	0	0	0	0.0	0	4	0	4	4	0	25	0	25	28	0	1	0	1	1	0	0	0	0	0	0
2151 LW1	0	1	1	1.0	0	2	0	2	2	0	25	0	25	28	0	1	0	1	1	0	0	1	1	1	0
2152 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2152 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	100	0	0	0	0	0	0	0	0	0	0	0
2152 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	167	0	1	0	1	1	0	0	0	0	0	0
2153 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	25 +	0	0	0	0	0	0	0	0	0	0	0
2153 LW1	0	0	0	0.0	0	3	0	3	3	0	25	0	25	250	0	1	0	1	1	0	0	0	0	0	0
2153 LW1	0	1	1	1.0	0	2	0	2	2	0	25	0	25	250	0	0	0	0	0	0	0	1	1	1	0
2154 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	25 +	0	0	0	0	0	0	0	0	0	0	0
2154 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	250	0	0	0	0	0	0	0	0	1	1	0
2154 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	250	0	4	0	4	4	0	0	0	0	0	0
2155 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	167	0	0	0	0	0	0	0	0	0	0	0
2155 LW1	0	0	0	0.0	0	4	1	5	5	0	25	0	25	250	0	2	0	2	2	0	0	0	1	1	0
2155 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	250	0	0	0	0	0	0	0	0	0	0	0

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2109 LW1	0	1	1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2109 LW1	25	0	25	25	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	
2109 LW1	25	3	28	37	0	1	0	1	1	0	0	9	9	9	2 none	0	0	0	0	0	na	na	na	na	
2110 LW1	1	0	1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2110 LW1	25	0	25	25	0	2	0	2	2	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2110 LW1	25	0	25	25	0	11	0	11	11	0	15	17	32	32	0	0	0	0	0	0	na	na	na	na	
2111 LW1	25	0	25	26	0	2	0	2	2	0	2	10	12	12	0	13	0	13	13	0	na	na	na	na	
2111 LW1	25	0	25	100	0	10	0	10	10	0	9	5	14	14	0	17	0	17	17	0	na	na	na	na	
2151 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2151 LW1	25	0	25	25	0	1	0	1	1	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	
2151 LW1	25	0	25	50	0	3	0	3	3	0	20	0	20	20	0	2	0	2	2	0	na	na	na	na	
2152 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2152 LW1	20	0	20	20	0	2	0	2	2	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	
2152 LW1	25	0	25	83	0	6	0	6	6	0	5	0	5	5	0	0	0	0	0	0	na	na	na	na	
2153 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	Present
2153 LW1	20	0	20	20	0	3	0	3	3	0	0	8	8	8	0	8	0	8	8	0	na	na	na	na	
2153 LW1	25	0	25	25	0	6	0	6	6	0	0	5	5	5	0	2	0	2	2	0	na	na	na	na	
2154 LW1	2	0	2	2	0	1	0	1	1	0	0	0	0	0		1	0	1	1	0	na	na	na	na	
2154 LW1	25	0	25	25	0	0	0	0	0	0	8	1	9	9	0	0	0	0	0	0	na	na	na	na	
2154 LW1	25	0	25	25	0	3	0	3	3	0	5	1	6	6	0	1	0	1	1	0	na	na	na	na	
2155 LW1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2155 LW1	25	0	25	25	0	2	0	2	2	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	
2155 LW1	25	0	25	100	0	6	0	6	6	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2156 LW1	0.42 - 1.00	0.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2156 LW1	0.25 - 0.42	0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2156 LW1	0.18 - 0.25	1.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2501 LW1	0.42 - 1.00	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0.0		0
2501 LW1	0.25 - 0.42	0.41	2	0	2	2	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0.0		0
2501 LW1	0.18 - 0.25	0.45	3	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2502 LW1	0.42 - 1.00	0.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2502 LW1	0.25 - 0.42	0.89	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2502 LW1	0.18 - 0.25	0.75	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2503 LW1	0.42 - 1.00	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2503 LW1	0.25 - 0.42	0.59	0	0	0	0	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0.0		0
2503 LW1	0.18 - 0.25	0.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2504 LW1	0.18 - 1.00	1.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2505 LW1	0.42 - 1.00	0.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2505 LW1	0.25 - 0.42	0.38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2505 LW1	0.18 - 0.25	0.29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1.0	llm'	0
2506 LW1	0.42 - 1.00	0.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2506 LW1	0.25 - 0.42	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2506 LW1	0.18 - 0.25	0.63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2507 LW1	0.42 - 1.00	0.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2507 LW1	0.25 - 0.42	0.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2507 LW1	0.18 - 0.25	0.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2508 LW1	0.42 - 1.00	1.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2508 LW1	0.25 - 0.42	1.37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2508 LW1	0.18 - 0.25	1.43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Oly	SEM Identified Oly	All Picked Oly (Visually and SEM Identified)	Estimated Total Oly	Suspect Oly That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2156 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	25	0	0	0	0	0	0	0	0	0	0	0	0
2156 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	50	0	1	0	1	1	0	0	0	0	0	0	0
2156 LW1	1	0	1	1.0	0	2	0	2	2	0	25	0	25	83	0	2	5	7	7	0	0	0	0	0	0	0
2501 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0	0
2501 LW1	0	0	0	0.0	0	8	0	8	8	0	25	0	25	50	0	1	0	1	1	0	0	0	0	0	0	0
2501 LW1	0	3	3	3.0	0	12	0	12	12	0	25	0	25	100	0	0	2	2	2	0	0	0	2	2	2	0
2502 LW1	0	0	0	0.0	0	5	0	5	5	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0	0
2502 LW1	1	0	1	1.0	0	18	0	18	18	0	25	0	25	26	0	1	0	1	1	0	0	0	0	0	0	0
2502 LW1	0	0	0	0.0	0	8	0	8	8	0	25	0	25	100	0	0	1	1	1	0	0	0	0	0	0	0
2503 LW1	0	0	0	0.0	0	4	0	4	4	0	25	0	25	42	0	0	0	0	0	0	0	0	0	0	0	0
2503 LW1	0	0	0	0.0	0	7	0	7	7	0	25	0	25	250	0	2	0	2	2	0	0	0	0	0	0	0
2503 LW1	0	0	0	0.0	0	10	0	10	10	0	25	0	25	167	0	0	0	0	0	0	0	0	0	0	0	0
2504 LW1	0	0	0	0.0	0	50	8	58	58	4 Diop	25	0	25	83	0	0	1	1	1	0	0	0	0	0	0	0
2505 LW1	0	0	0	0.0	0	0	0	0	0	0	23	0	23	23	0	0	0	0	0	0	0	0	0	0	0	0
2505 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	125	0	0	0	0	0	0	0	0	0	0	0	0
2505 LW1	0	1	1	1.0	1 Ilm	0	0	0	0	1 Amph?	25	0	25	50	0	1	0	1	1	0	0	0	0	0	0	0
2506 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0	0
2506 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	50	0	0	1	1	1	0	0	0	0	0	0	0
2506 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	50	0	0	4	4	4	0	0	0	0	0	0	0
2507 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	33	0	0	0	0	0	0	0	0	0	0	0	0
2507 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	100	0	1	0	1	1	0	0	0	0	0	0	0
2507 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	250	0	0	0	0	0	0	0	0	0	0	0	0
2508 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	100	0	0	0	0	0	0	0	0	0	0	0	0
2508 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	167	0	0	1	1	1	0	0	0	0	0	0	0
2508 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	500	0	1	1	2	2	0	0	0	1	1	1	0

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2156 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	na	na	na	na	Present
2156 LW1	23	0	23	43	0	1	0	1	1	0	3	0	3	3	0	1	0	1	1	0	na	na	na	na	
2156 LW1	25	0	25	42	0	1	0	1	1	0	11	0	11	11	0	0	0	0	0	0	na	na	na	na	
2501 LW1	0	0	0	0	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	na	na	na	na	
2501 LW1	25	0	25	25	0	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	na	na	na	na	
2501 LW1	25	0	25	25	0	1	0	1	1	0	10	11	21	21	0	3	0	3	3	0	na	na	na	na	
2502 LW1	0	0	0	0	0	1	0	1	1	0	1	0	1	1	0	1	0	1	1	0	na	na	na	na	
2502 LW1	25	0	25	25	0	3	0	3	3	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2502 LW1	25	0	25	25	0	10	0	10	10	0	8	0	8	8	0	2	0	2	2	0	na	na	na	na	
2503 LW1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2503 LW1	25	0	25	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2503 LW1	25	0	25	167	0	7	0	7	7	0	4	0	4	4	0	0	0	0	0	0	na	na	na	na	
2504 LW1	25	0	25	33	0	10	0	10	10	0	7	0	7	7	0	2	0	2	2	0	na	na	na	na	Present
2505 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2505 LW1	15	1	16	16	0	0	0	0	0	0	0	3	3	3	0	0	0	0	0	0	na	na	na	na	
2505 LW1	25	0	25	25	0	1	0	1	1	0	0	7	7	7	0	0	0	0	0	0	na	na	na	na	
2506 LW1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2506 LW1	11	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2506 LW1	25	0	25	25	0	3	0	3	3	0	11	3	14	14	0	0	0	0	0	0	na	na	na	na	
2507 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2507 LW1	25	0	25	25	0	0	0	0	0	0	11	0	11	11	0	0	0	0	0	0	na	na	na	na	
2507 LW1	25	0	25	25	0	8	0	8	8	0	20	0	20	20	0	1	0	1	1	0	na	na	na	na	
2508 LW1	4	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2508 LW1	25	0	25	71	0	2	0	2	2	0	2	0	2	2	0	0	0	0	0	0	na	na	na	na	
2508 LW1	25	0	25	100	0	7	0	7	7	0	3	0	3	3	0	0	0	0	0	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2509 LW1	0.42 - 1.00	2.46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2509 LW1	0.25 - 0.42	2.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2509 LW1	0.18 - 0.25	1.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2510 LW1	0.42 - 1.00	1.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2510 LW1	0.25 - 0.42	1.49	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0.0		0
2510 LW1	0.18 - 0.25	0.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2511 LW1	0.42 - 1.00	0.74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2511 LW1	0.25 - 0.42	0.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2511 LW1	0.18 - 0.25	0.88	2	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2512 LW1	0.25 - 1.00	2.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2512 LW1	0.18 - 0.25	0.61	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0.0		0
2513 LW1	0.42 - 1.00	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2513 LW1	0.25 - 0.42	0.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2513 LW1	0.18 - 0.25	0.12	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0		0	0	0.0		0
2514 LW1	0.42 - 1.00	0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2514 LW1	0.25 - 0.42	1.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2514 LW1	0.18 - 0.25	0.99	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2515 LW1	0.18 - 1.00	0.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2516 LW1	0.42 - 1.00	2.89	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2516 LW1	0.25 - 0.42	2.66	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2516 LW1	0.18 - 0.25	1.12	8	1	9	9	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2517 LW1	0.25 - 1.00	6.78	6	0	6	6	0	0	0	0	0	0	0	0	0	0	0		0	0	0.0		0
2517 LW1	0.18 - 0.25	2.78	11	0	11	11	0	0	0	0	0	0	2	0	2	2	0		0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Oly	SEM Identified Oly	All Picked Oly (Visually and SEM Identified)	Estimated Total Oly	Suspect Oly That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2509 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2509 LW1	0	0	0	0.0	0	5	0	5	5	0	25	0	25	56	0	3	0	3	3	0	0	0	0	0	0
2509 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	250	0	2	0	2	2	0	0	0	0	0	0
2510 LW1	0	0	0	0.0	0	3	0	3	3	0	25	0	25	250	0	0	0	0	0	0	0	0	0	0	0
2510 LW1	0	0	0	0.0	0	12	2	14	14	0	25	0	25	250	0	0	0	0	0	0	0	1	1	1	0
2510 LW1	0	0	0	0.0	0	3	0	3	3	0	25	0	25	250	0	0	1	1	1	0	0	4	4	4	0
2511 LW1	2	0	2	2.0	0	1	0	1	1	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0
2511 LW1	9	1	10	10.0	0	3	0	3	3	0	25	0	25	167	0	1	0	1	1	0	3	0	3	3	0
2511 LW1	6	11	17	17.0	0	6	0	6	6	0	25	0	25	100	0	1	0	1	1	0	0	0	0	0	0
2512 LW1	0	0	0	0.0	0	0	2	2	2	1 none	25	0	25	100	0	0	0	0	0	0	0	1	1	1	0
2512 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	100	0	3	1	4	4	0	0	2	2	2	0
2513 LW1	0	0	0	0.0		0	0	0	0	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2513 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	33	0	1	0	1	1	0	0	0	0	0	0
2513 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	167	0	1	0	1	1	0	0	0	0	0	0
2514 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	28	0	0	0	0	0	0	0	0	0	0	0
2514 LW1	0	0	0	0.0	0	1	1	2	2	0	25	0	25	33	0	0	0	0	0	0	0	1	1	1	0
2514 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	100	0	1	1	2	2	0	0	0	0	0	0
2515 LW1	0	0	0	0.0	0	50	0	50	100	0	25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2516 LW1	5	0	5	5.0	0	8	0	8	8	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2516 LW1	4	0	4	4.0	0	50	0	50	83	0	25	0	25	125	0	0	0	0	0	0	0	0	0	0	0
2516 LW1	0	1	1	1.0	0	50	0	50	67	0	25	0	25	500	0	0	1	1	1	0	0	0	0	0	0
2517 LW1	15	0	15	15.0	0	50	0	50	100	0	25	0	25	50	0	1	1	2	2	0	0	2	2	2	0
2517 LW1	0	3	3	3.0	0	50	0	50	100	0	22	0	22	44	0	4	3	7	7	0	0	0	0	0	0

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2509 LW1	5	0	5	5	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	na	na	na	na	
2509 LW1	25	0	25	25	0	2	0	2	2	0	5	1	6	6	0	0	0	0	0	0	na	na	na	na	
2509 LW1	25	0	25	25	0	3	0	3	3	0	3	2	5	5	0	8	0	8	8	0	na	na	na	na	
2510 LW1	2	0	2	2	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2510 LW1	25	3	28	140	0	3	0	3	3	0	7	7	14	14	0	0	0	0	0	0	na	na	na	na	
2510 LW1	25	1	26	87	0	6	1	7	7	0	23	2	25	50	3 Flor	0	0	0	0	0	na	na	3	3.0	Flor'
2511 LW1	4	0	4	4	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	Present
2511 LW1	25	0	25	83	0	2	0	2	2	0	4	0	4	4	0	0	0	0	0	0	na	na	na	na	
2511 LW1	25	0	25	83	0	25	0	25	25	+ 0	5	0	5	5	0	0	0	0	0	0	na	na	na	na	
2512 LW1	25	1	26	26	0	0	0	0	0	0	0	2	2	2	0	1	0	1	1	0	na	na	na	na	Present
2512 LW1	25	0	25	25	0	3	0	3	3	0	0	8	8	8	0	5	0	5	5	0	na	na	na	na	
2513 LW1	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2513 LW1	0	0	0	0	0	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	na	na	na	na	
2513 LW1	25	0	25	25	0	1	0	1	1	0	9	0	9	9	0	1	0	1	1	0	na	na	na	na	
2514 LW1	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2514 LW1	25	0	25	28	0	3	0	3	3	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2514 LW1	25	0	25	28	0	4	0	4	4	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2515 LW1	15	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2516 LW1	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2516 LW1	25	0	25	25	0	4	0	4	4	0	3	1	4	4	0	1	0	1	1	0	na	na	na	na	
2516 LW1	25	0	25	25	0	13	0	13	13	0	12	7	19	19	0	4	0	4	4	0	na	na	na	na	
2517 LW1	0	4	4	4	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2517 LW1	25	0	25	25	0	3	0	3	3	0	0	4	4	4	0	1	0	1	1	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2518 LW1	0.42 - 1.00	1.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2518 LW1	0.25 - 0.42	1.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2518 LW1	0.18 - 0.25	0.57	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2519 LW1	0.42 - 1.00	0.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2519 LW1	0.25 - 0.42	1.05	0	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0.0		0
2519 LW1	0.18 - 0.25	0.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2520 LW1	0.42 - 1.00	1.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2520 LW1	0.25 - 0.42	1.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2520 LW1	0.18 - 0.25	1.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2522 LW1	0.25 - 1.00	3.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1.0	IIm[1]	0
2522 LW1	0.18 - 0.25	1.43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1.0	IIm[1]	0
2523 LW1	0.25 - 1.00	1.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2523 LW1	0.18 - 0.25	0.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2524 LW1	0.42 - 1.00	1.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2524 LW1	0.25 - 0.42	1.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2524 LW1	0.18 - 0.25	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2525 LW1	0.42 - 1.00	1.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2525 LW1	0.25 - 0.42	1.57	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0.0		0
2525 LW1	0.18 - 0.25	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2526 LW1	0.42 - 1.00	0.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2526 LW1	0.25 - 0.42	0.69	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0.0		0
2526 LW1	0.18 - 0.25	0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2527 LW1	0.42 - 1.00	1.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2527 LW1	0.25 - 0.42	0.97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0		0
2527 LW1	0.18 - 0.25	0.68	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Oly	SEM Identified Oly	All Picked Oly (Visually and SEM Identified)	Estimated Total Oly	Suspect Oly That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2518 LW1	0	0	0	0.0	0	50	0	50	50 + 0		25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2518 LW1	0	0	0	0.0	0	50	0	50	50 + 0		25	0	25	26	0	0	0	0	0	0	0	0	0	0	0
2518 LW1	0	0	0	0.0	0	50	0	50	50 + 0		25	0	25	50	0	0	3	3	3	0	0	0	1	1	1
2519 LW1	0	0	0	0.0	0	9	0	9	9 0		25	0	25	100	0	0	1	1	1	0	0	0	0	0	0
2519 LW1	0	0	0	0.0	0	33	0	33	33 0		25	0	25	50	0	0	1	1	1	0	0	0	0	0	0
2519 LW1	0	0	0	0.0	0	31	0	31	31 0		25	0	25	50	0	0	3	3	3	0	0	0	1	1	1
2520 LW1	0	0	0	0.0	0	2	0	2	2 0		25	0	25	25 + 0		0	0	0	0	0	0	0	0	0	0
2520 LW1	0	0	0	0.0	0	2	0	2	2 0		25	0	25	31	0	0	0	0	0	0	0	1	1	1	1
2520 LW1	0	0	0	0.0	0	0	0	0	0 0		25	0	25	125	0	0	2	2	2	0	0	0	0	0	0
2522 LW1	0	1	1	1.0	1 llm	1	0	1	1 0		25	0	25	25 + 0		2	0	2	2	0	0	1	1	1	1
2522 LW1	0	1	1	1.0	1 llm	2	0	2	2 0		25	0	25	25 + 0		3	1	4	4	0	0	1	1	1	1
2523 LW1	0	0	0	0.0	0	1	3	4	4 0		25	0	25	50	0	0	0	0	0	0	0	0	0	0	0
2523 LW1	0	1	1	1.0	0	2	1	3	3 0		25	0	25	250	0	0	0	0	0	0	0	1	1	1	1
2524 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	125	0	0	0	0	0	0	0	0	0	0	0
2524 LW1	0	0	0	0.0	0	3	0	3	3 0		25	0	25	250	0	2	0	2	2	0	0	3	3	3	3
2824 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	250	0	0	0	0	0	0	0	0	0	0	0
2525 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	25 + 0		0	0	0	0	0	0	1	1	1	1
2525 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	250	0	4	0	4	4	0	0	0	0	0	0
2525 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	250	0	0	0	0	0	0	0	0	0	0	0
2526 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	25 + 0		1	0	1	1	0	0	0	0	0	0
2526 LW1	0	0	0	0.0	0	13	2	15	15 0		25	0	25	125	0	0	0	0	0	0	0	0	0	0	0
2526 LW1	0	0	0	0.0	0	2	0	2	2 0		25	0	25	167	0	0	0	0	0	0	0	0	0	0	0
2527 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	42	0	0	0	0	0	0	0	0	0	0	0
2527 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	167	0	0	0	0	0	0	0	0	0	0	0
2527 LW1	0	0	0	0.0	0	1	0	1	1 0		25	0	25	250	0	3	0	3	3	0	0	1	1	1	1

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2518 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	Present
2518 LW1	9	0	9	9	0	0	0	0	0	0	0	5	5	5	0	1	0	1	1	0	na	na	na	na	
2518 LW1	25	0	25	25	0	4	0	4	4	0	0	7	7	7	1 Flor	0	0	0	0	0	na	na	1	1.0	Flor[1]
2519 LW1	3	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2519 LW1	25	0	25	50	0	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	na	na	na	na	
2519 LW1	25	0	25	50	0	6	0	6	6	0	2	1	3	3	0	0	0	0	0	0	na	na	na	na	
2520 LW1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2520 LW1	25	0	25	50	0	0	0	0	0	0	6	0	6	6	0	0	0	0	0	0	na	na	na	na	
2520 LW1	25	0	25	100	0	1	0	1	1	0	6	2	8	8	0	1	0	1	1	0	na	na	na	na	
2522 LW1	12	0	12	12	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	na	na	na	na	
2522 LW1	25	0	25	25	0	3	0	3	3	0	4	1	5	5	0	0	0	0	0	0	na	na	na	na	
2523 LW1	25	0	25	25	0	1	0	1	1	0	5	0	5	5	0	0	0	0	0	0	na	na	na	na	Present
2523 LW1	25	0	25	25	0	2	0	2	2	0	0	5	5	5	0	1	0	1	1	0	na	na	na	na	
2524 LW1	0	0	0	0	0	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	na	na	na	na	
2524 LW1	25	0	25	25	0	0	0	0	0	0	15	7	22	22	6 Flor	0	0	0	0	0	na	na	6	6.0	Flor[1]
2524 LW1	25	0	25	83	0	4	0	4	4	0	25	0	25	125	0	na	0	na	0	0	na	na	na	na	
2525 LW1	6	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2525 LW1	25	0	25	25	0	2	0	2	2	0	7	0	7	7	0	0	0	0	0	0	na	na	na	na	
2525 LW1	25	0	25	50	0	3	0	3	3	0	17	3	20	20	0	0	0	0	0	0	na	na	na	na	
2526 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2526 LW1	10	0	10	10	0	1	0	1	1	0	2	0	2	2	0	0	0	0	0	0	na	na	na	na	
2526 LW1	25	0	25	25	0	3	0	3	3	0	12	0	12	12	0	0	0	0	0	0	na	na	na	na	
2527 LW1	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2527 LW1	25	0	25	25	0	1	0	1	1	0	0	2	2	2	0	0	0	0	0	0	na	na	na	na	
2527 LW1	25	0	25	83	0	4	0	4	4	0	0	2	2	2	0	2	0	2	2	0	na	na	na	na	

Sample	Size Fraction (mm)	Fraction Weight (g)	Visually Identified Pyr	SEM Identified Pyr	All Picked Pyr (Visually and SEM Identified)	Estimated Total Pyr	Suspect Pyr That Failed SEM Check and Suggested Mineralogy	Visually Identified Ecl	SEM Identified Ecl	All Picked Ecl (Visually and SEM Identified)	Estimated Total Ecl	Suspect Ecl That Failed SEM Check and Suggested Mineralogy	Visually Identified Cpx	SEM Identified Cpx	All Picked Cpx (Visually and SEM Identified)	Estimated Total Cpx	Suspect Cpx That Failed SEM Check and Suggested Mineralogy	Visually Identified Ilm	SEM Identified Ilm	All Picked Ilm (Visually and SEM Identified)	Estimated Total Ilm	Ilm Comment	Suspect Ilm That Failed SEM Check
2528 LW1	0.42 - 1.00	1.28	0	0	0	0	0	0	1	1	0		0	0	0	0		0	0	0	0.0		0
2528 LW1	0.25 - 0.42	0.96	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2528 LW1	0.18 - 0.25	0.63	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2529 LW1	0.42 - 1.00	0.88	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2529 LW1	0.25 - 0.42	0.77	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2529 LW1	0.18 - 0.25	0.55	0	2	2	2	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2530 LW1	0.42 - 1.00	0.78	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2530 LW1	0.25 - 0.42	0.53	4	1	5	5	0	0	1	1	1		0	0	0	0		0	0	0	0.0		0
2530 LW1	0.18 - 0.25	0.31	11	0	11	11	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2531 LW1	0.42 - 1.00	1.80	0	0	0	0	0	0	0	0	0		0	0	0	0		0	0	0	0.0		0
2531 LW1	0.25 - 0.42	1.24	0	0	0	0	0	0	0	0	0		0	1	1	1	0		0	0	0.0		0
2531 LW1	0.18 - 0.25	0.48	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0.0		0
2532 LW1	0.18 - 1.00	0.65	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0.0		0
2533 LW1	0.42 - 1.00	0.20	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0.0		0
2533 LW1	0.25 - 0.42	0.17	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	2	2	2.0	llm^1	0
2533 LW1	0.18 - 0.25	0.22	0	0	0	0	0	0	0	0	0		1	0	1	1	0		0	0	0	0.0		0
2557 LW1	0.42 - 1.00	0.48	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0
2557 LW1	0.25 - 0.42	0.46	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0
2557 LW1	0.18 - 0.25	0.64	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0
2560 LW1	0.42 - 1.00	1.52	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0
2560 LW1	0.25 - 0.42	1.48	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0
2560 LW1	0.18 - 0.25	0.98	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0	0	0	0.0		0

Sample	Visually Identified Chr	SEM Identified Chr	All Picked Chr (Visually and SEM Identified)	Estimated Total Chr	Suspect Chr That Failed SEM Check and Suggested Mineralogy	Visually Identified Olv	SEM Identified Olv	All Picked Olv (Visually and SEM Identified)	Estimated Total Olv	Suspect Olv That Failed SEM Check and Suggested Mineralogy	Visually Identified Epi	SEM Identified Epi	All Picked Epi (Visually and SEM Identified)	Estimated Total Epi	Suspect Epi That Failed SEM Check	Visually Identified Spn	SEM Identified Spn	All Picked Spn (Visually and SEM Identified)	Estimated Total Spn	Suspect Spn That Failed SEM Check and Suggested Mineralogy	Visually Identified Apa	SEM Identified Apa	All Picked Apa (Visually and SEM Identified)	Estimated Total Apa	Suspect Apa That Failed SEM Check And Suggested Mineralogy
2528 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	33	0	0	0	0	0	0	0	0	0	0	0	0
2528 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	33	0	0	0	0	0	0	0	0	0	0	0	0
2528 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	83	0	0	0	0	0	0	0	0	0	0	0	0
2529 LW1	0	2	2	2.0	0	0	0	0	0	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0	0
2529 LW1	0	16	16	16.0	0	13	0	13	13	0	25	0	25	100	0	0	0	2	2	2	0	0	0	0	0	0
2529 LW1	0	4	4	4.0	0	5	0	5	5	0	25	0	25	250	0	0	0	0	0	0	0	0	1	1	1	0
2530 LW1	2	0	2	2.0	0	9	0	9	9	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0	0
2530 LW1	0	2	2	2.0	0	23	0	23	23	0	25	0	25	83	0	0	0	0	0	0	0	0	0	0	0	0
2530 LW1	1	0	1	1.0	0	14	0	14	14	0	25	0	25	100	0	0	0	0	0	0	0	0	0	0	0	0
2531 LW1	0	0	0	0.0	0	1	0	1	1	0	25	0	25	25	+ 0	0	0	0	0	0	0	0	0	0	0	0
2531 LW1	0	0	0	0.0	0	3	0	3	3	0	25	0	25	50	0	0	0	0	0	0	0	0	0	0	0	0
2531 LW1	0	0	0	0.0	0	0	0	0	0	2 Bar	25	0	25	83	0	0	0	0	0	0	0	0	0	0	0	0
2532 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	26	0	2	0	2	2	0		0	0	0	0	0
2533 LW1	1	0	1	1.0	0	31	0	31	31	0	25	0	25	26	0	0	0	0	0	0		0	0	0	0	0
2533 LW1	0	3	3	3.0	2 Ilm	50	0	50	51	0	25	0	25	50	0	0	0	0	0	0		0	0	0	0	0
2533 LW1	0	0	0	0.0	0	45	3	48	48	0	25	0	25	100	0	2	0	2	2	0		0	0	0	0	0
2557 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	50	0	0	0	0	0	0		0	0	0	0	0
2557 LW1	0	0	0	0.0	0	11	0	11	11	2 Bar	25	0	25	100	0	0	0	0	0	0		0	1	1	1	0
2557 LW1	0	0	0	0.0	0	14	0	14	14	0	25	0	25	250	0	0	0	0	0	0		0	0	0	0	0
2560 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	25	+ 0	0	0	0	0	0		0	0	0	0	1 Bar
2560 LW1	0	0	0	0.0	0	2	0	2	2	0	25	0	25	25	+ 0	0	0	0	0	0		0	0	0	0	2 Bar
2560 LW1	0	0	0	0.0	0	0	0	0	0	0	25	0	25	25	+ 0	0	1	1	1	0		0	0	0	0	1 Bar

Sample	Visually Identified Tour	SEM Identified Tour	All Picked Tour (Visually and SEM Identified)	Estimated Total Tour	Suspect Tour That Failed SEM Check	Visually Identified Rut	SEM Identified Rut	All Picked Rut (Visually and SEM Identified)	Estimated Total Rut	Suspect Rut That Failed SEM Check	Visually Identified Mon	SEM Identified Mon	All Picked Mon (Visually and SEM Identified)	Estimated Total Mon	Suspect Mon That Failed SEM Check and Suggested Mineralogy	Visually Identified Sul	SEM Identified Sul	All Picked Sul (Visually and SEM Identified)	Estimated Total Sul Grains	Suspect Sul That Failed SEM Check	Visually Identified Florencite	SEM Identified Florencite	All Picked Florencite (Visually and SEM Identified)	Estimated Total Florencite	Florencite Comment
2528 LW1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	na	na	na	na	
2528 LW1	25	0	25	25	0	0	0	0	0	0	2	1	3	3	0	0	0	0	0	0	na	na	na	na	
2528 LW1	25	0	25	25	0	4	0	4	4	0	0	2	2	2	0	2	0	2	2	0	na	na	na	na	
2529 LW1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2529 LW1	25	0	25	30	0	1	0	1	1	0	0	3	3	3	0	0	0	0	0	0	na	na	na	na	
2529 LW1	25	0	25	100	0	3	0	3	3	0	10	5	15	15	0	6	0	6	6	0	na	na	na	na	
2530 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2530 LW1	25	0	25	25	0	0	0	0	0	0	2	4	6	6	0	0	0	0	0	0	na	na	na	na	
2530 LW1	25	0	25	25	0	0	0	0	0	0	8	0	8	8	0	0	0	0	0	0	na	na	na	na	
2531 LW1	0	0	0	0	0	0	0	0	0	0	2	2	4	4	0	0	0	0	0	0	na	na	na	na	
2531 LW1	16	0	16	16	0	0	0	0	0	0	3	1	4	4	0	0	0	0	0	0	na	na	na	na	
2531 LW1	25	0	25	25	0	0	0	0	0	0	4	1	5	5	0	0	0	0	0	0	na	na	na	na	
2532 LW1	13	0	13	13	0	2	0	2	2	0	0	3	3	3	0	0	0	0	0	0	na	na	na	na	
2533 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2533 LW1	25	0	25	25	0	2	0	2	2	0	7	0	7	7	0	0	0	0	0	0	na	na	na	na	
2533 LW1	25	0	25	31	0	5	0	5	5	0	20	0	20	20	0	0	0	0	0	0	na	na	na	na	
2557 LW1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	
2557 LW1	17	0	17	17	0	2	0	2	2	0	8	2	10	10	0	1	0	1	1	0	na	na	na	na	
2557 LW1	25	0	25	25	0	12	0	12	12	0	25	0	25	25	0	2	0	2	2	0	na	na	na	na	
2560 LW1	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	na	na	na	na	Present
2560 LW1	0	0	0	0	0	22	0	22	22	0	0	0	0	0	0	3	0	3	3	0	na	na	na	na	
2560 LW1	17	0	17	17	0	25	0	25	25 +	0	0	0	0	0	0	15	0	15	15	0	na	na	na	na	

Appendix 7 – Combined Laboratory-1 and Lakefield Indicator Mineral Picking Results

(includes all Lab-1 (definite and possible) and Lakefield grains picked before and after heavy liquid separation)

Minerals:
pyr: Pyrope
cpx: Clinopyroxene (Chrome diopside)
ecl: Eclogitic garnet
olv: Olivine
ilm: Ilmentite (picroilmenite)
chr: Chromite

Column Headings:
Original Sample Weight: Weight of field sample received by Lab-1.
Processed Sample Weight: Equals original sample weight except for samples 2513M and 2515M, parts of which were accidentally combined at Lab-1. It is estimated, based upon fraction weights, that the uncombined parts of samples 2513M and 2515M consisted of about 50% of the original weight.

Quality Control Samples:
2532M: Field duplicate of sample 2505M spiked with 40 grains of Cr-Diopside.
2533M: Field duplicate of sample 2504M (no spike grains added).
2560M: Brownvale till (AGS quality control material) spiked with 10 pyrope, 10 chromite, 10 Cr-diopside and 10 olivine grains.

Notes:
[1]Parts of samples 2513M and 2515M were accidentally combined during processing at Lab-1. The combined material is identified as sample 2513M-2515M.
Normalization is to 30 kg of processed sample weight.
nr: Not recorded.

Sample	Easting	Northing	Coordinate System	Sample Material	Sample Comment	Original Sample Weight (kg)	Processed Sample Weight (kg)	Lab-1 and Lakefield Picked Grains Normalized to 30 kg						Lab-1 and Lakefield Picked Grains					
								pyr	cpx	ecl	olv	ilm	chr	pyr	cpx	ecl	olv	ilm	chr
2001M	568009	6311986	UTM NAD83	till	routine sample	28.15	28.15	0	1	0	1	0	0	0	1	0	1	0	0
2002M	564508	6313845	UTM NAD83	till	routine sample	30.55	30.55	0	0	0	25	0	0	0	0	0	25	0	0
2003M	579834	6301421	UTM NAD83	till	routine sample	13.45	13.45	4	0	0	187	0	0	2	0	0	84	0	0
2004M	578296	6298995	UTM NAD83	till	routine sample	18.05	18.05	7	0	2	35	0	3	4	0	1	21	0	2
2005M	578163	6301765	UTM NAD83	till	routine sample	23.85	23.85	526	6	8	172	0	239	418	5	6	137	0	190
2006M	575921	6299720	UTM NAD83	till	routine sample	29.80	29.80	220	2	3	6	6	192	219	2	3	6	6	191
2007M	574097	6300675	UTM NAD83	till	routine sample	31.85	31.85	123	8	1	61	2	121	131	8	1	65	2	128
2021M	588382	6300329	UTM NAD83	till	routine sample	30.30	30.30	0	0	1	0	0	1	0	0	1	0	0	1
2022M	576097	6301257	UTM NAD83	sand	routine sample	23.35	23.35	48	3	1	257	6	42	37	2	1	200	5	33
2023M	580195	6292009	UTM NAD83	till	routine sample	26.70	26.70	1	1	0	80	0	3	1	1	0	71	0	3
2024M	577935	6291933	UTM NAD83	till	routine sample	27.30	27.30	1	0	0	22	0	1	1	0	0	20	0	1
2104M	588144	6303996	UTM NAD83	till	routine sample	30.55	30.55	0	0	0	3	0	0	0	0	0	3	0	0
2105M	588330	6300369	UTM NAD83	till	routine sample	31.35	31.35	0	0	0	1	0	0	0	0	0	1	0	0
2106M	575995	6302043	UTM NAD83	till	routine sample	25.50	25.50	74	1	1	15	0	9	63	1	1	13	0	8
2107M	571995	6302689	UTM NAD83	till	routine sample	34.60	34.60	10	2	0	51	0	1	12	2	0	59	0	1
2108M	585214	6299571	UTM NAD83	till	routine sample	35.95	35.95	0	0	0	2	0	0	0	0	0	2	0	0
2109M	573540	6303026	UTM NAD83	till	routine sample	35.45	35.45	8	1	0	14	0	3	9	1	0	16	0	3
2110M	567868	6304968	UTM NAD83	till	routine sample	33.55	33.55	0	0	0	2	0	1	0	0	0	2	0	1
2111M	563741	6305523	UTM NAD83	till	routine sample	37.50	37.50	0	0	0	2	0	1	0	0	0	3	0	1
2151M	584089	6292167	UTM NAD83	till	routine sample	32.15	32.15	1	1	0	6	0	1	1	1	0	6	0	1
2152M	586237	6295339	UTM NAD83	till	routine sample	29.70	29.70	0	0	0	0	0	0	0	0	0	0	0	0
2153M	581921	6295246	UTM NAD83	till	routine sample	32.25	32.25	0	0	0	6	0	1	0	0	0	6	0	1
2154M	576075	6304059	UTM NAD83	till	routine sample	37.70	37.70	1	1	0	3	0	0	1	1	0	4	0	0
2155M	575958	6303213	UTM NAD83	till	routine sample	37.45	37.45	0	1	0	7	0	1	0	1	0	9	0	1
2156M	563456	6310223	UTM NAD83	till	routine sample	33.90	33.90	0	0	0	4	0	1	0	0	0	4	0	1
2501M	564273	6300732	UTM NAD83	till	routine sample	28.25	28.25	8	1	0	23	0	3	8	1	0	22	0	3
2502M	572218	6299784	UTM NAD83	till	routine sample	34.90	34.90	8	2	0	27	0	3	9	2	0	31	0	3
2503M	579821	6303852	UTM NAD83	till	routine sample	27.60	27.60	0	1	1	23	0	2	0	1	1	21	0	2
2504M	579937	6303017	UTM NAD83	till	routine sample	23.70	23.70	0	0	1	95	0	0	0	0	1	75	0	0
2505M	577938	6303014	UTM NAD83	till	routine sample	25.55	25.55	0	32	0	1	1	4	0	27	0	1	1	3
2506M	574968	6315342	UTM NAD83	till	routine sample	26.80	26.80	0	0	0	1	0	0	0	0	0	1	0	0
2507M	574856	6311448	UTM NAD83	till	routine sample	27.95	27.95	0	0	0	0	0	0	0	0	0	0	0	0
2508M	575358	6306886	UTM NAD83	till	routine sample	26.90	26.90	0	0	0	2	0	0	0	0	0	2	0	0
2509M	584326	6310533	UTM NAD83	till	routine sample	31.50	31.50	0	1	0	6	0	0	0	1	0	6	0	0

Sample	Easting	Northing	Coordinate System	Sample Material	Sample Comment	Original Sample Weight (kg)	Processed Sample Weight (kg)	Lab-1 and Lakefield Picked Grains Normalized to 30 kg						Lab-1 and Lakefield Picked Grains					
								pyr	cpx	ecl	olv	ilm	chr	pyr	cpx	ecl	olv	ilm	chr
2510M	580830	6308619	UTM NAD83	till	routine sample	29.20	29.20	0	1	0	21	0	0	0	1	0	20	0	0
2511M	564059	6296083	UTM NAD83	till	routine sample	25.95	25.95	18	2	0	12	0	40	16	2	0	10	0	35
2512M	588651	6308170	UTM NAD83	till	routine sample	29.20	29.20	0	0	0	3	0	0	0	0	0	3	0	0
2513M	572019	6311323	UTM NAD83	till	routine sample	28.20	14.10	0	4	0	2	0	0	0	2	0	1	0	0
2514M	571391	6308445	UTM NAD83	till	routine sample	28.95	28.95	1	0	0	3	0	0	1	0	0	3	0	0
2515M	567985	6292543	UTM NAD83	till	routine sample	25.95	12.98	5	7	0	347	0	2	2	3	0	150	0	1
2516M	567900	6295898	UTM NAD83	till	routine sample	28.35	28.35	99	3	0	150	1	18	94	3	0	142	1	17
2517M	576642	6297798	UTM NAD83	till	routine sample	29.20	29.20	71	2	0	103	0	22	69	2	0	100	0	21
2518M	572027	6295531	UTM NAD83	till	routine sample	24.75	24.75	2	0	0	182	0	0	2	0	0	150	0	0
2519M	574123	6296000	UTM NAD83	till	routine sample	26.10	26.10	1	1	0	84	0	0	1	1	0	73	0	0
2520M	584615	6315547	UTM NAD83	till	routine sample	28.00	28.00	0	0	0	4	0	0	0	0	0	4	0	0
2522M	581079	6316630	UTM NAD83	till	routine sample	27.05	27.05	0	0	0	3	2	2	0	0	0	3	2	2
2523M	580900	6312307	UTM NAD83	till	routine sample	26.85	26.85	0	0	0	8	0	1	0	0	0	7	0	1
2524M	588214	6311674	UTM NAD83	till	routine sample	28.90	28.90	0	0	0	5	0	0	0	0	0	5	0	0
2525M	584210	6307402	UTM NAD83	till	routine sample	28.45	28.45	0	2	0	3	0	1	0	2	0	3	0	1
2526M	583958	6303888	UTM NAD83	till	routine sample	26.65	26.65	8	1	1	20	0	2	7	1	1	18	0	2
2527M	567780	6300003	UTM NAD83	till	routine sample	27.70	27.70	0	1	1	3	0	0	0	1	1	3	0	0
2528M	572670	6300642	UTM NAD83	till	routine sample	26.30	26.30	0	3	1	0	0	1	0	3	1	0	0	1
2529M	564477	6299302	UTM NAD83	till	routine sample	31.00	31.00	59	2	0	19	0	35	61	2	0	20	0	36
2530M	572552	6315352	UTM NAD83	till	routine sample	27.95	27.95	132	3	1	57	1	30	123	3	1	53	1	28
2531M	586410	6314337	UTM NAD83	till	routine sample	28.60	28.60	0	1	0	4	0	0	0	1	0	4	0	0
2532M				till	spiked duplicate of 2505M	25.55	25.55	0	14	0	0	0	0	0	12	0	0	0	0
2533M				till	field duplicate of 2504M	22.35	22.35	0	1	0	173	3	5	0	1	0	129	2	4
2557M	571676	6292707	UTM NAD83	till	routine sample	26.95	26.95	0	0	0	28	0	0	0	0	0	25	0	0
2560M				till	spiked Brownvale till	34.00	34.00	12	6	0	10	0	9	14	7	0	11	0	10
2513M-2515M1				till	sample mixed at lab	nr	nr	0	0	0	0	0	0	3	1	0	50	0	0